DRAFT
ENVIRONMENTAL ASSESSMENT

SEDIMENT REMOVAL DOWNSTREAM OF RETAMAL DIVERSION DAM

UNITED STATES SECTION,
INTERNATIONAL BOUNDARY AND WATER COMMISSION
UNITED STATES AND MEXICO

OCTOBER 2003

FINDING OF NO SIGNIFICANT IMPACT

SEDIMENT REMOVAL DOWNSTREAM OF RETAMAL DIVERSION DAM

AGENCY

United States Section, International Boundary and Water Commission (USIBWC).

BACKGROUND

Sediment has been accumulating in the channel on the United States (U.S.) side of the Rio Grande since Retamal Diversion Dam was first constructed by the International Boundary Water Commission (IBWC) in 1973. Because of low-flow conditions in the Rio Grande and continued drought an island and sandbar formed downstream of Retamal Diversion Dam as a result of sediment accumulation. If sediment continues to build up along the concrete apron, operations of the gates that control flood flow conditions could potentially be impaired. Additionally, sediment buildup has caused the main channel in the river to shift toward the Mexican side, thus potentially changing the boundary location between the two countries. According to recommendations in the December 1997 and April 2003 Joint Report of the Technical Advisors of the IBWC regarding the electrical, mechanical, geotechnical & structural safety of Retamal Diversion Dam, the island and sandbar should be removed to re-establish the original cross-section of the river.

In 1970 the U.S. and Mexico signed a comprehensive treaty to settle all pending boundary differences in such a way as to preserve the Rio Grande as the boundary, and to provide for measures to minimize the number of changes in the river channel location.

PROPOSED ACTION

The USIBWC proposes to remove the vegetated island and sandbar by dredging the sediment, either hydraulically (Option 1) or mechanically (Option 2), and beneficially use or dispose of all the material on vacant Mexican Federal Government land adjacent to the river at the dredging location.

NO ACTION ALTERNATIVE

The sandbar and island downstream of the Retamal Diversion Dam will not be removed. The accumulation of sediment will likely continue in the channel on the U.S. side of the Rio Grande and along the concrete apron beneath the flood gates, thus potentially impairing the ability of the gates to operate effectively to properly control flood events. The main channel in the river could continue shifting toward the Mexican side, thus potentially changing the boundary location between the two countries.

SUMMARY OF FINDINGS

Pursuant to National Environmental Policy Act (NEPA) guidance, 40 Code of Federal Regulations (CFR) 1500-1508, The President's Council on Environmental Quality (CEQ) issued regulations to implement the NEPA which included provisions for both the content and procedural aspects of the required environmental assessment (EA). The USIBWC completed an EA of the potential environmental consequences of removing sediments downstream of the Retamal Diversion Dam. The EA, which supports this Finding of No Significant Impact (FONSI), evaluated the Proposed Action and the No Action Alternative.

EVALUATION OF THE PROPOSED ACTION – OPTION 1

Water Rights. Hydraulic dredging operations could not occur without water acquisitions. Currently, there are no U.S. water rights available. Water will have to be temporarily supplied by Mexico or purchased from water right holders.

Approximately 1,200 acre-feet of water rights will be needed for dredging operations to occur; however, additional amounts will likely be necessary to allow for contingencies.

River Hydrology.

Water Regimes: Due to restrictions imposed under existing water availability, river flow will not be reduced during the hydraulic dredging operations. Assuming the maximum amount of slurry mix required per day is 3,000 cubic yards (cy), the increase in water usage required for hydraulic dredging operations is approximately 0.15 percent. Hydraulic operations will be dependent upon USIBWC obtaining water from Mexico or temporary water rights from existing holders. Long-term impacts on river hydrology will be negligible, as the Proposed Action will re-establish design channel configuration created during the original dam construction.

Sedimentation: Hydraulic dredging operations (Option 1) will result in less turbidity than mechanical dredging (Option 2). Elevated levels of suspended solids concentrations will be confined to the immediate vicinity of the dredge and dissipate rapidly upon completion of the operation. Dredging operations will be performed with downstream areas enclosed with a silt curtain, Gunderbooms®, or other appropriate means to prevent degradation of turbidity outside the dredging area. Long-term maintenance likely will be required to address re-occurring island formation and related sediment accretion at the dam apron to assure channel configuration is maintained in the future.

Flood Control: Hydraulic modeling results indicate that an approximate 0.05 foot increase in flood containment capacity will be achieved by dredging. Therefore, removing the sandbar and island will not appreciably improve flood control in the river channel.

Water and Dredge Material Quality. Sediment and elutriate sampling results of the dredge material are below Texas Commission on Environmental Quality (TCEQ) criteria for those parameters. Total suspended solids (TSS) in the discharge at the dewatering cells from the beneficial use (BU) site will be controlled through best management practices (BMP). Discharge created in Mexico from the dewatering process of dredged material will be directed away from and not allowed into the river.

Soils and Geology. The Proposed Action will occur within an area in which the soils have been disturbed and modified by prior construction. Approximately 54,000 cy of river substrate will be removed by dredging. The equipment lay-down area will revert to pre-construction state upon completion of the project. The contractor will ensure completion and approval of a storm water pollution prevention plan before initiating activities.

Wetlands. The Proposed Action will eliminate 2.1 acres of riverine wetlands, which represent a net decrease of 4 percent of riverine wetlands for the Lower Rio Grande. United States Army Corps of Engineers Section 10 and 404 permits will be required for dredging as well as a mitigation plan to offset the loss of 2.1 acres of wetlands.

Vegetation. Loss of vegetation will include 2.1 acres of Arundo-Salix community and 0.2 acres of a Salix-Celtis community. Overall, vegetation on the island is common for the region and the impacts by its loss to the regional vegetative community will be minimal. The equipment lay-down area will be located in an oldfield herbaceous community and will be disturbed during construction. The vegetation will be reseeded by native species upon completion of the project.

Wildlife. Removal of the sediment island will have a localized negative impact to some species of wildlife. Dredging operations will have a direct localized impact on benthic invertebrates, although it is not likely to have a measurable effect on the river's benthic community. Impacts to wildlife, particularly migratory birds will be minimized by conducting dredging operations outside of the nesting season and major migratory periods. Although the Project Area habitat is not considered unique and is dominated by intrusive non-native species, the limited extent of riverine wetland communities within the Lower River Grande Valley accentuate the Project Area's value as wildlife habitat.

Threatened and Endangered Species. The Proposed Action will not likely impact threatened and endangered (T&E) species near the Project Area, although there is a possibility of T&E species near the Project Area.

Aquatic Resources. There is no commercial fishing in the river near the island and sandbar. Fish will be minimally impacted by dredging activities in the Project Area. Temporary increases in turbidity and equipment noise and activity will cause avoidance by mobile species such as fish. Such impacts will cease when dredging is completed. Benthic organisms in the dredged material will be directly impacted; however, the Project Area represents such a minor portion of river bottom that the impact to those organisms will not affect the ecosystem. Further, birds and fish, due to their mobile nature, will be able to avoid the dredging equipment and sustain no long-term ill effects from the Proposed Action.

Air Quality. The greatest increase in emissions will be PM_{10} (0.42 tons) from dredging activities, equating to 0.11 percent of the PM_{10} emissions within Hidalgo County. The emissions will be temporary, fall off rapidly with distance from the Project Area, and will last only as long as the dredging activities. The county is in attainment status; therefore, a Conformity Determination will not be required.

Noise. Noise from equipment could be as high as 89 decibels at distances of 50 feet from the source, and will be intermittent and short-term in duration. There are no sensitive receptors near the Project Area or surrounding area so there will be minimal noise impacts from the proposed activities.

Cultural Resources. There are no archaeological sites or historic structures of cultural significance on the island or near the Project Area. In addition, correspondence from the Texas Historical Commission concerning removal of sediments from the Project Area stated that the Proposed Action should not have an effect on cultural resources eligible for inclusion in the National Register of Historic Places.

Hazardous and Toxic Waste. No listed hazardous and/or toxic waste sites are known to occur in the Project Area. No impacts from hazardous and/or toxic waste are expected from the proposed activities. The contractor will comply with regulatory guidance for the use and disposal of hazardous materials and wastes during any construction and dredging activities. The volumes of hazardous materials purchased for, and hazardous wastes generated during, dredging operations will be negligible. Implementing established industry practices for controlling releases of the substances will reduce the possibility of accidental releases of these hazardous and toxic products. Preventative maintenance and daily inspections of the equipment will ensure that any releases of these hazardous and toxic products are minimized.

Socioeconomics. Adverse consequences to population, housing, and community infrastructure will not occur. Beneficial effects to employment will occur during the construction period; however, the benefits will be short-term and will not measurably affect the county-wide unemployment rate of 13.7 percent in 2001. The proposed project will generate income to the local economy. The amount will be small compared to the county's total income of $3.6 billion; therefore, beneficial effects to Hidalgo's economy will be negligible.

Local roadways could experience short-term adverse consequences resulting from increased traffic during the construction period as workers commute to and from the work site; however, the consequence will be short-term.

Environmental Justice. Hidalgo County has a disproportionately high minority population (approximately 89 percent) and low-income populations (individuals – 35.9 percent); however, land use adjacent to the Project Area is primarily rural and designated a wilderness area. Adverse consequences to disproportionately high minority and low-income populations resulting from construction activities will not occur.

EVALUATION OF THE PROPOSED ACTION – OPTION 2

Water Rights. Water rights will not be required; therefore, impacts will not be expected.

River Hydrology.

Water Regimes: River flow will be maintained at all times during dredging activities. Water will not be required to remove sediment by mechanical dredging. Areas of the island as well as cross sections of the river will have to be segregated or sectioned off from the flow of water so as not to cause loss of dredge material during operations. Therefore, river flow is not expected to be impacted by mechanical dredging activities. Long term impacts on river hydrology will be negligible, as the Proposed Action will re-establish design channel configuration created during the original dam construction.

Sedimentation: Sediment may be deposited downstream during dredging operations creating higher levels of TSS. Sediment BMPs will be necessary to prevent fine sediments from being deposited downstream during the dredging operations. Dredging material will have to be transported by trucks to the final disposal area; however, truck access from the dredge site on the U.S. side of the river to Mexico is not available. Potentially, a conveyor system could be used to transport dredged material to the top of the dike on the Mexican side, where truck access will be possible. An impervious silt curtain downstream or around the dredging operation will be used. Any negative impacts due to fugitive sediments will be localized and occur only during times of actual dredging operations. Long-term maintenance will likely be required to address re-occurring island formation and related sediment accretion at the dam apron to assure channel configuration is maintained in the future.

Flood Control: Impacts associated with implementation of Option 2 will be similar to those described under Option 1.

Water and Dredge Material Quality. Impacts associated with implementation of Option 2 will be similar to those described under Option 1. Mechanical dredging operations will likely cause an increase in TSS over the hydraulic dredging method. TSS in the discharge from the BU site will be controlled through BMPs.

Soils and Geology. Impacts associated with implementation of Option 2 will be similar to those described under Option 1.

Wetlands. Impacts associated with implementation of Option 2 will be similar to those described under Option 1.

Vegetation. Impacts associated with implementation of Option 2 will be similar to those described under Option 1.

Wildlife. Impacts associated with implementation of Option 2 will be similar to those described under Option 1.

Threatened and Endangered Species. Impacts associated with implementation of Option 2 will be similar to those described under Option 1.

Aquatic Resources. Impacts associated with implementation of Option 2 will be similar to those described under Option 1.

Air Quality. Under Option 2, construction activity will increase slightly due to the additional use of cranes and other mechanical dredging equipment. The greatest increase in emissions will be SO_x (0.18 tons) from dredging activities, equating to 0.305 percent of the SO_x emissions within Hidalgo County. The emissions will be temporary, fall off rapidly with distance from the Project Area, and will last only as long as the dredging activities. The county is in attainment status; therefore, a Conformity Determination will not be required.

Noise. Impacts associated with implementation of Option 2 will be similar to those described under Option 1.

Cultural Resources. Impacts associated with implementation of Option 2 will be similar to those described under Option 1.

Hazardous and Toxic Waste. Impacts associated with implementation of Option 2 will be similar to those described under Option 1.

Socioeconomics. Impacts associated with implementation of Option 2 will be similar to those described under Option 1.

Environmental Justice. Impacts associated with implementation of Option 2 will be similar to those described under Option 1.

EVALUATION OF THE NO ACTION ALTERNATIVE

Water Rights. There will be no impacts on water rights.

River Hydrology.

Water Regimes: No impacts will occur from the baseline activities. The main channel in the river could continue to shift toward the Mexican side of the international boundary.

Sedimentation: Accumulation of sediment will likely continue in the channel on the U.S. side of the Rio Grande and along the concrete apron beneath the flood gates, thus potentially impairing the ability of the gates to operate effectively to properly control flood events. Further changes to the international boundary will likely occur as the river continues to cut into the Mexican side of the river bank. The main channel in the river could potentially continue to migrate, thus shifting the international boundary. Long-term maintenance will likely be required to address sediment accretion at the dam apron and to assure channel configuration is maintained in the future.

Flood Control: Currently, there is no appreciable impact to flood containment capacity. Bank stabilization (armoring with rip-rap) on the Mexican side will likely re-establish the former bank extent and the international boundary.

Water and Sediment Quality. Under the No Action Alternative, there will be no change from the baseline conditions.

Soils and Geology. The No Action Alternative will include continuation of current maintenance practices under the baseline condition, which will not affect the existing soils and geology in the Project Area. There will be no significant erosion or compaction of soils due to the current maintenance practices.

Wetlands. Under the No Action Alternative, there will be no change from the baseline conditions. Long-term changes could include an increase in wetlands as sediment continues to accrete and vegetation becomes established. Decrease in wetlands are also possible in the advent of a storm event which could displace the island. Heavy sediment loads and variable water regimes of the Rio Grande will continue to provide a source and means for sediment build-up.

Vegetation. There will be no measurable change from the baseline conditions. Long-term changes could include an increase in early successional communities. Decrease in vegetation is also possible in the advent of a storm event which could displace the island.

Wildlife. There will be no measurable change from the baseline conditions.

Threatened and Endangered Species. There will be no measurable change from the baseline conditions.

Aquatic Resources. There will be no measurable change from the baseline conditions.

Air Quality. Emissions will continue at the levels generated under the baseline conditions.

Noise. The noise environment will not change from the baseline conditions.

Cultural Resources. No disturbance of cultural resources will occur.

Hazardous and Toxic Waste. There will be no change from the baseline conditions.

Socioeconomics. There will be no change to existing population, housing, and community infrastructure. Additionally, the No Action Alternative will not have any measurable consequence, beneficial or adverse, to income and employment.

Environmental Justice. The situation for minority and low-income populations will remain unchanged.

DECISION

Based on my review of the facts and analyses contained in the EA, I conclude that implementation of the Proposed Action will not have a significant impact, either by itself or when considering cumulative impacts. Accordingly, the requirements of the NEPA and regulations promulgated by the Council on Environmental Quality are fulfilled and an environmental impact statement is not required.

Debra J. Little, Acting Commissioner
International Boundary and Water Commission,
United States Section

Date

COVER SHEET

DRAFT ENVIRONMENTAL ASSESSMENT
SEDIMENT REMOVAL DOWNSTREAM OF RETAMAL DIVERSION DAM

Responsible Agency: United States Section, International Boundary and Water Commission

Proposed Action: Remove a vegetated island and sandbar by dredging the sediment, either hydraulically (Option 1) or mechanically (Option 2), and beneficially use or dispose of all the material on vacant Mexican Federal Government land adjacent to the river at the dredging location.

Written comments and inquires regarding this document should be directed to: Daniel Borunda, Environmental Protection Specialist, United States Section, International Boundary and Water Commission, 4171 N. Mesa, C-100, El Paso, Texas 79902, email: danielborunda@ibwc.state.gov.

Report Designation: Environmental Assessment

Abstract: Since Retamal Diversion Dam was first constructed, sediment has been accumulating in the channel on the U.S. side of the river. Because of low-flow conditions in the Rio Grande and continued drought conditions, an island and sandbar have formed downstream of Retamal Diversion Dam and along the concrete apron downstream of the flood control gates. Additionally, during the Mexican flood in 1988 as a result of Hurricane Gilbert, sediments accumulated in the Mexican off-river floodway system upstream of Retamal Diversion Dam. The sediments were later flushed into the Rio Grande which added to the problem of sediment buildup. If sediment continues to accumulate along the concrete apron, operations of the gates that control flood flow conditions would likely be impaired. Additionally, the sediment buildup has caused the main channel in the river to shift toward the Mexican side, thus potentially changing the boundary location between the two countries. The USIBWC proposes to remove vegetation from the island, dredge the sediment either mechanically or hydraulically, and reuse or dispose of all the material on vacant Mexican Federal Government land adjacent to the river at the dredging location.

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ENVIRONMENTAL ASSESSMENT

SEDIMENT REMOVAL DOWNSTREAM OF RETAMAL DIVERSION DAM

United States Section,
International Boundary and Water Commission
United States and Mexico

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Table of Contents

APPENDICES

LIST OF FIGURES

LIST OF TABLES

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ACRONYMS AND ABBREVIATIONS

$\mu g/m^3$	Microgram per cubic meter
AQCR	Air quality control region
BMP	Best management practices
BPUB	Brownsville Public Utilities Board
BTS	Directorate of Border and Transportation Security
BU	Beneficial use
BWR Project	Brownsville Weir and Reservoir Project
CAA	Clean Air Act
CDP	Census designated places
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CFR	Code of Federal Regulations
cfs	cubic feet per second
cms	cubic meters per second
CNA	Comisión Nacional de Agua
CO	Carbon monoxide
CWA	Clean Water Act
cy	Cubic yards
DA	Department of the Army
DHS	Department of Homeland Security
DNL	Day-night average sound level
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
ERNSS	Emergency Response Notification System of Spills
FISRWG	Federal Interagency Stream Restoration Working Group
FONSI	Finding of No Significant Impact
FWC	Friends of the Wildlife Corridor
IBWC	International Boundary and Water Commission
ICE	Bureau of Immigration and Customs Enforcement (formerly INS)
INS	Immigration and Naturalization Service (now ICE)
LRGFCP	Lower Rio Grande Flood Control Project
LRGV	Lower Rio Grande Valley
mg/L	Milligram per liter
mg/m^3	Milligram per cubic meter
MSL	Mean sea level
MxIBWC	Mexican Section, International Boundary and Water Commission
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_2	Nitrogen dioxide
NPL	National Priority List
NRCS	Natural Resources Conservation Service

NRHP	National Register of Historic Places
O_3	Ozone
OHWL	Ordinary high water level
Pb	Lead
PCL	Protective concentration limit
PL	Public law
PM	Particulate matter
RBEL	Risk-based exposure levels
RCRA	Resource Conservation Recovery Act
RM	River Mile
SARA	Superfund Amendments and Reauthorization Act
SFHA	Special flood hazard area
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	sulfur dioxide
SO_X	Sulfur oxides
SWDA	Solid Waste Disposal Act
T&E	Threatened and endangered
TCEQ	Texas Commission on Environmental Quality (formerly Texas Natural Resources Conservation Commission [TNRCC])
TDHCA	Texas Department of Housing and Community Affairs
THC	Texas Historical Commission
TPWD	Texas Parks and Wildlife Department
tpy	Tons per year
TSCA	Toxic Substances Control Act
TSP	Total suspended particles
TSS	Total suspended solids
U.S.	United States
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USCB	U.S. Census Bureau
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USIBWC	U.S. Section, International Boundary and Water Commission
WMA	Wildlife management area

SECTION 1
PURPOSE OF AND NEED FOR THE PROPOSED ACTION

This chapter discusses the following: the mission of the International Boundary and Water Commission (IBWC); the background information on the international treaty agreements between the U.S. and Mexico; the authority and agreement between the two countries; boundary issues between the U.S. and Mexico and the responsibility of the U.S. Customs Service and the IBWC; the purpose of and need for the Proposed Action, the location of the Proposed Action, and the scope of the environmental review.

1.1 INTRODUCTION

The International Boundary and Water Commission (IBWC), which before 1944 was known as the International Boundary Commission, was created by the Convention of 1889, and consists of a United States Section (USIBWC) and a Mexico Section (MxIBWC). The Commission was established to apply the rights and obligations the Governments of the United States (U.S.) and Mexico assumed under the numerous boundary and water treaties and related agreements. Application of the rights and obligations are accomplished in a way that benefits the social and economic welfare of the people on both sides of the boundary and improves relations between the two countries. The mission of the USIBWC is to assure:

- Regulation and conservation of waters of the Rio Grande for use by the U.S. and Mexico through joint construction, operation, and maintenance of international storage dams and reservoirs and plants for generating hydroelectric energy at the dams, and regulation of the Colorado River waters allocated to Mexico;
- Distribution of waters of the Rio Grande and the Colorado River between the two countries;
- Protection of lands along the Rio Grande from floods through levee and floodway projects and solution of border sanitation and other border water quality problems;
- Preservation of the Rio Grande and Colorado River as the international boundary; and
- Demarcation of the land boundary.

1.2 BACKGROUND

In 1932, an agreement was reached between the United States and Mexico to develop a coordinated plan for an international project to protect the Lower Rio Grande Valley (LRGV) in both countries against flooding from the Rio Grande. This agreement, which later resulted in the Lower Rio Grande Flood Control Project (LRGFCP), was developed by the IBWC. The USIBWC and MxIBWC sections are each responsible for meeting treaty obligations within their national boundaries.

The U.S. portion of the LRGFCP facilities are located in Hidalgo, Cameron, and Willacy Counties, Texas, with the river levee beginning near the Town of Penitas at the head of the delta, about 180 river miles (RM) from the Gulf of Mexico. The U.S. portion of the LRGFCP includes one-half of the Anzalduas Diversion Dam (completed in 1960), the Retamal Diversion Dam (completed in 1973), 168 miles of levees flanking an interior floodway system, including the natural channel of the Arroyo Colorado, and 102 miles of levees along the Rio Grande (USIBWC 1980). Retamal Diversion Dam is located at RM 129.22 and Anzalduas Diversion Dam located at RM 169.14.

The LRGFCP is designed to protect urban, suburban, and highly developed irrigated farm lands in the Rio Grande delta in both countries from floods of the Rio Grande. The LRGFCP contains a variety of features for protection of the LRGV of Texas, including the Rio Grande main stem, an interior floodway system, and two diversion dams. The LRGFCP flood levees are grass-covered earthen structures, with a distance between the U.S. and Mexican levees ranging from approximately 400 feet to 3 miles (USIBWC 1992). The U.S. portion of the LRGFCP is operated to convey excess floodwaters of the Rio Grande Valley to the Gulf of Mexico through the river and United States interior floodways. The USIBWC and MxIBWC jointly operate the two diversion dams.

Anzalduas Diversion Dam is operated to divert water as required by the Treaty of February 3, 1944, "Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande" (TS994; 59 Stat. 1219). Flood operations of the LRGFCP also involve close coordination of the USIBWC and MxIBWC in the operation of two upstream reservoirs (Amistad and Falcon) to control floodwaters reaching the LRGFCP area. The two sections work closely on the division of excess floodwaters diverted into each country's interior floodway systems. Normal operation of the LRGFCP includes daily operation of the Anzalduas Diversion Dam for diversion of Mexican irrigation waters and frequent inspection of the entire LRGFCP area to ensure flood readiness. Retamal Diversion Dam is not a daily operational structure and is only operated in the event floodwaters need to be diverted to the Mexican interior floodway.

The design flood for the LRGFCP is an approximate 100-year flood, with a flow of 250,000 cubic feet per second (cfs) at Rio Grande City. During the design flood, both Anzalduas Diversion Dam and Retamal Diversion Dam will divert 105,000 cfs into the U.S. and Mexico, respectively. Flow diversion during the design flood will limit flood flows through the Brownsville-Matamoros area to 20,000 cfs The USIBWC and MxIBWC jointly operate Retamal Diversion Dam, diverting flows into the Mexican off-river floodway system. The USIBWC and MxIBWC coordinate the operation of these dams to ensure both dams divert equal flows into the respective countries during significant flood events.

1.3 AUTHORITY AND AGREEMENT WITH MEXICO

The U.S. and Mexico, since first establishing their boundary in 1848, consistently agreed that the middle of the Rio Grande should be their boundary in the international

reach of this river. The two countries affirmed their intentions to maintain the river as the boundary in the Rectification Convention of 1933 and the Chamizal Convention of 1963. In 1970, the U.S. and Mexico signed a comprehensive treaty to settle all pending boundary differences in such a way as to preserve the Rio Grande as the boundary, and to provide for measures to minimize the number of changes in the river channel location (USIBWC 1980).

Additionally, the Act of August 19, 1935, the Water Treaty of 1944, and Minutes 196 (1950), 212 (1961), and 238 (1970), of the IBWC conferences between both countries established guidelines on sharing of water, responsibilities of flood control, and the associated costs, including maintenance and construction expenses on the Rio Grande, *i.e.,* each country is responsible for maintenance and construction on its respective side of the border. Maintenance of the levee system, river channel, floodway, and dams is discussed in Section 3.1.

1.4 BUREAU OF IMMIGRATION AND CUSTOMS ENFORCEMENT

As an international boundary, the project and surrounding area is under constant surveillance by the newly formed Department of Homeland Security (DHS), through the Directorate of Border and Transportation Security (BTS). On March 1, 2003, functions of several border and security agencies, including the U.S. Customs Service, Federal Protective Service, and former Immigration and Naturalization Service (INS) were transferred into the BTS within the DHS. As part of the transition, these agency functions were reorganized into the Bureau of Immigration and Customs Enforcement (ICE) (ICE 2003). Although the function of the ICE has been expanded from those of the former INS, one of its primary duties is still the detection and prevention of smuggling and illegal entry of aliens into the U.S. Maintenance issues concerning the river as a boundary and demarcation of a boundary between the U.S. and Mexico are the responsibility of the USIBWC. The Rio Grande is a natural deterrent to illegal entry into the U.S. (USIBWC 2002).

1.5 PURPOSE OF AND NEED FOR ACTION

Retamal Diversion Dam was constructed by the IBWC in 1973. The dam is about 182 feet wide and 88 feet long and contains three radial gates that regulate river flows. The dam is an integral part of the LRGFCP. Its primary function is to force all flood flows in excess of the safe capacity of the channel (20,000 cfs design flow) through the Mexican Floodway of the Rio Grande between the dam and the Gulf of Mexico.

Since Retamal Diversion Dam was first constructed, sediment has been accumulating in the channel on the U.S. side of the river. Because of low-flow conditions in the Rio Grande and continued drought an island and sandbar have formed downstream of Retamal Diversion Dam and along the concrete apron downstream of the flood control gates. Additionally, during the Mexican flood in 1988 as a result of Hurricane Gilbert, sediments accumulated in the Mexican off-river floodway system upstream of Retamal Diversion Dam. To reduce the amount of sediment buildup,

MxIBWC flushed the sediments from the floodway system into the Rio Grande, which eventually settled near the island and added to the problem of sediment buildup.

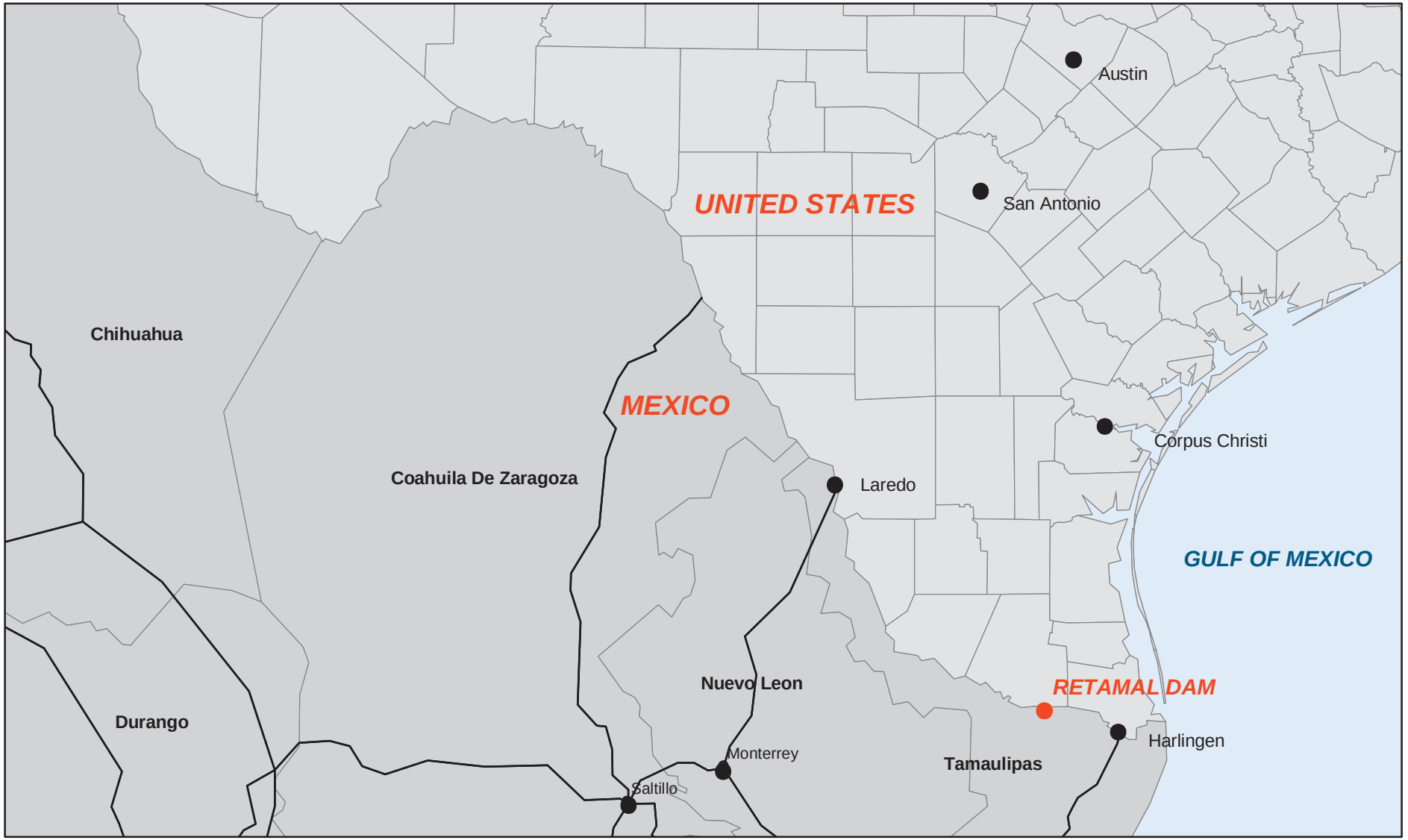
If sediment continues to build up along the concrete apron, operations of the gates that control flood flow conditions would likely be impaired. Additionally, the sediment buildup has caused the main channel in the river to shift toward the Mexican side, thus potentially changing the boundary location between the two countries. Shifting of the main channel just downstream of the dam has also caused the elevation of the river bottom to increase from about 1 foot to 7 feet from the original invert elevations. According to recommendations in the December 1997 and April 2003 Joint Report of the Technical Advisors of the International Boundary and Water Commission Regarding the Electrical, Mechanical, Geotechnical & Structural Safety of Retamal Diversion Dam, the island and sandbar should be removed to re-establish the original cross-section of the river (USIBWC 1997 2003a).

The purpose and need of the action is to remove sediment buildup downstream of Retamal Diversion Dam to ensure that the flood control gates can continue to operate effectively and to stop the main channel from shifting toward the Mexican side of the boundary. The USIBWC proposes to remove vegetation from the island, dredge the sediment either mechanically or hydraulically, and reuse or dispose of all the material on vacant Mexican Federal Government land adjacent to the river at the dredging location.

1.6 LOCATION OF THE PROPOSED ACTION

The USIBWC Proposed Action would be conducted within the LRGFCP at the site of the Retamal Diversion Dam. The Retamal Diversion Dam is located approximately 8 miles south of Weslaco in Hidalgo County, Texas at river mile (RM) 132.50. Figure 1.1 shows the general location of the Project Area. The Proposed Action is defined to include the U.S. portion of a sandbar and island that extends from the dam concrete apron and proceeds downstream approximately 1,407 feet.

The island varies in width from about 35 to 120 feet and is heavily vegetated. The height of the island varies from about 2 to 10 feet above the water level. A sandbar has developed on the upstream and downstream side of the island. The size of the sandbar and island is approximately 4.94 acres and includes an estimated 53,652 cubic yards (cy) of sediment material. A U.S. Contractor would remove the sediment material from the whole width of the river and place it on vacant Mexican Federal Government land adjacent to the river at the dredging location. The U.S. Contractor would be working on both the U.S. and the Mexican sides of the Rio Grande. The middle of the Rio Grande is considered the international boundary between the U.S. and Mexico. A Mexican Contractor would be responsible for hauling the sediment material to a reuse or permanent disposal site located in Mexico.



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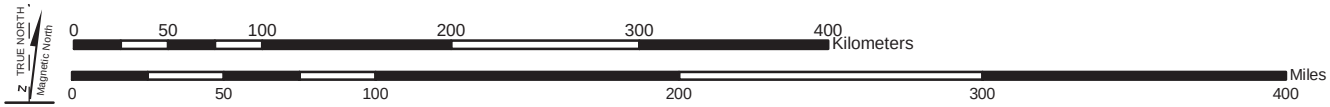

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Figure 1.1 General Location of Study Area

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1.7 SCOPE OF THE ENVIRONMENTAL REVIEW

Federal agencies are required to take into consideration the environmental consequences of proposed and alternative actions in the decision-making process under the National Environmental Policy Act (NEPA) of 1969, as amended. The President's Council on Environmental Quality (CEQ) issued regulations to implement NEPA that include provisions for both the content and procedural aspects of the required environmental analysis. In 1978, the CEQ issued regulations implementing the process (40 CFR 1500-1508). The USIBWC was mandated to have agency regulations for implementing NEPA which are entitled "*Operational Procedures for Implementing Section 102 of the National Environmental Policy Act of 1969, Other Laws Pertaining to Specifics Aspects of the Environment and Applicable Executive Orders*" (46FR44083, September 2, 1981) (Appendix 501-A). These federal regulations establish both the administrative process and substantive scope of the environmental impact evaluation designed to ensure that deciding authorities have a proper understanding of the potential environmental consequences of a contemplated course of action. The CEQ regulations require that an environmental assessment (EA):

- Briefly provide evidence and analysis to determine whether the Proposed Action might have significant effects that would require preparation of an environmental impact statement (EIS). If analysis determines that the environmental effects would not be significant, a finding of no significant impact (FONSI) will be prepared;
- Facilitate the preparation of an EIS, when required; or
- Aid an agency's compliance with NEPA when no EIS is necessary.

This EA identifies, describes, and evaluates the potential environmental impacts that may result from implementation of the Proposed Action and the No Action Alternative. It also identifies required environmental permits relevant to the Proposed Action and the No Action Alternative. As appropriate, the affected environment and the environmental consequences of the Proposed Action and the No Action Alternative are discussed in site-specific descriptions or regional overview. Finally, the EA, if required, identifies mitigation measures to prevent or minimize impacts to environmental resources.

The following biophysical resources will be assessed in the EA: water rights, river hydrology, water and sediment quality, soils and geology, wetlands, vegetation, wildlife, threatened and endangered species, aquatic resources, air quality, noise, cultural resources, hazardous and toxic wastes, socioeconomic; and environmental justice.

The EA will not assess potential environmental impacts associated with the placement of dredged materials on the Mexican sides of the Rio Grande nor the permanent disposal site for the materials. The MxIBWC has agreed that the USIBWC will perform the work using a U.S. Contractor to remove and place the sediment material in temporary dewatering holding cells on the Mexican side of the riverbank. The

MxIBWC has agreed to transport the material from the temporary holding cells using a Mexican Contractor to a permanent disposal site located in Mexico.

SECTION 2
DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

This chapter presents a detailed description of the alternatives, an overview of the dredging methods and development, descriptions of past and reasonably foreseeable future actions, and summarizes the environmental effects of the Proposed Action and No Action Alternative.

2.1 DETAILED DESCRIPTION OF THE PROPOSED ACTION

The Proposed Action is to dredge the island and sandbar below the Retamal Diversion Dam by hydraulic or mechanical methods. The sediment would be removed to within 1 foot of a proposed channel invert elevation. The proposed bottom elevation varies from 55.25 feet to 54.25 in the dredging area. The normal dam operating water surface elevation is 60.6 feet during the non-irrigation season. The dredge channel width varies between 180 feet and 290 feet. Initial dredging would begin adjacent to the dam concrete apron below the dam and proceed downstream approximately 1,400 feet. Dredging may include various types of material including fine to coarse sand, silty sand, and silts. Results of the geophysical testing of the sediments from the field studies conducted in June 2003 indicate that the majority of the material consists of sand with some silt and clays (USIBWC 2003b). Figure 2.1 shows dredging locations, construction equipment lay-down areas, and other Project Area features.

Representative cross-sections of the river at the dredging location were provided by USIBWC and included in the field studies results report (USIBWC 2003b). These cross-sections show both cut and fill would be required to attain the design channel invert elevation, although filling has been determined to be unnecessary for the Proposed Action; therefore, no filling activities would be included in the Proposed Action (USIBWC 2003c). Areas lower than the design invert elevation would remain the same.

Vegetation clearing on the sediment island would be performed prior to dredging activities. Some general debris including tree stumps, roots, tree branches, logs, large rocks, other vegetation, and floating trash may also be encountered.

The work would need to be completed between September and February, corresponding to the non-irrigation season when water levels in the river are maintained at lower levels. Ambient air temperatures can vary from the lower 30 degrees Fahrenheit during the winter months to highs of 105 F in the summer months.

Construction facilities would be arranged and operated in a manner to preserve and protect existing features, trees, and vegetation to the maximum extent practicable. All vegetation such as trees, shrubs, and grass, and other landscape features on or adjacent to the worksite, which are not to be removed and which do not unreasonably interfere with the required work would be preserved, protected, and repaired if damaged, as would all

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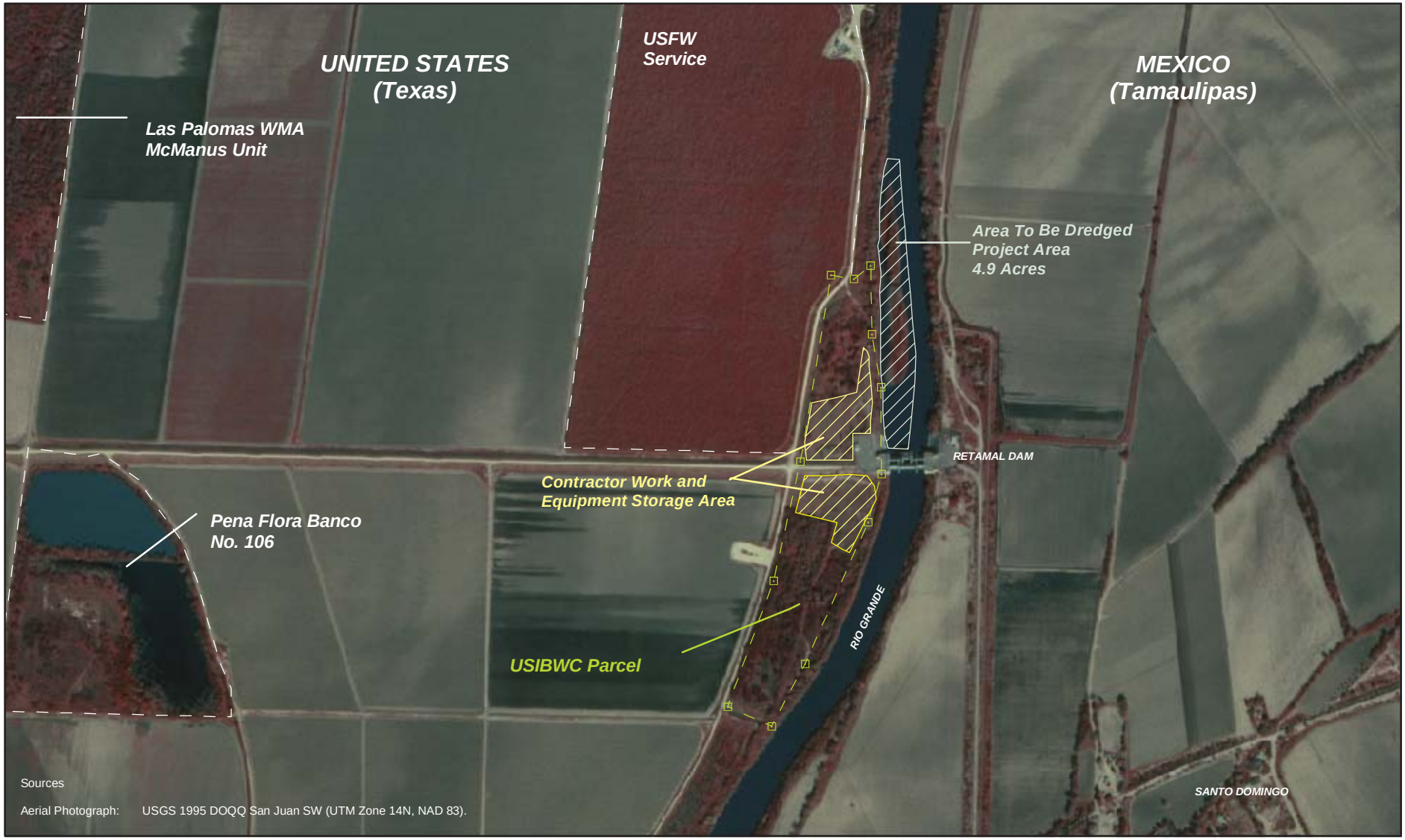

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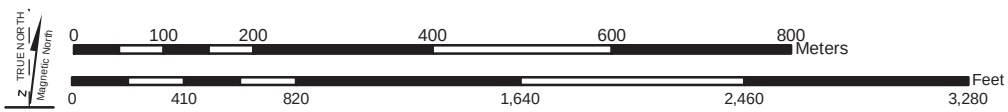

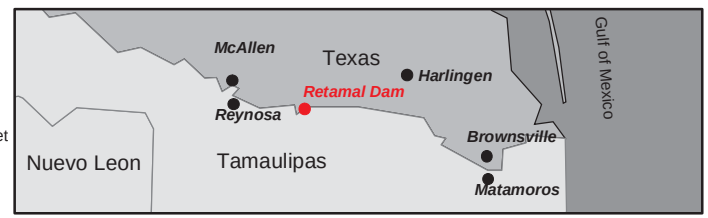

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Figure 2.1 Detailed Location of Project Area

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existing improvements and utilities at or near the Project Area. Areas would be clearly defined to prevent entry of personnel into non-work areas or into areas that contain protected or endangered species.

2.1.1 Hydraulic Dredging – Option 1

Approximately 54,000 cy of materials would be removed by hydraulic dredging with BU of the excavated materials on the Mexican side of the border. Dredging operations would take approximately 20 to 180 days to complete depending on the production rate. River flow would be maintained at all times during the project work. Figure 2.2 shows the location of the proposed disposal area of the dredged materials. A typical slurry concentration from hydraulic dredging would be 13 percent by dry weight (USACE 1983). Using this value, a total slurry volume of more than 120 million gallons of slurry can be expected to be produced.

The production rates were based on Parsons experience concerning similar dredging operations, and by referring to the calculated production. The amount of time a 10-inch hydraulic pipeline dredge would be in use is a function of production rate (amount of sediment dredged per hour (cy/hr) and operational days. The maximum production rate for a 10-inch dredge ranges between 30-300 cy/hr, pumping up to 1,000 feet away. The production rate would be reduced substantially beyond 1,000 feet (to approximately 20 to 30 percent of the maximum rates), but could be increased by using booster pumps (Parsons 2002).

Assuming a cell height of 8 feet., the theoretical minimum cell area required to contain the 54,000 cy of sediment, *without the slurry water*, would be approximately 4.2 acres. However, the high sand content of the sediments suggests that the dredged material would settle rapidly out of the slurry. The area required for dewatering the sediments can be reduced by constructing more than one dewatering cell, so that sediments can be allowed to dewater while slurry is applied to another cell. It may also be desirable to have a final cell that is dedicated to settling any remaining suspended silt and clay sediment. The actual number and size of the dewatering cells would be dependent upon the dredging contractor's proposed method of operation, type of equipment, cell design, and dewatering time. A series of perforated lateral drains and pumps would greatly reduce the size of the dewatering cells. Alternatively, the dredged materials could be pumped into permeable geotextile tubes (geotubes) to contain the slurry, thus allowing the sediments to remain inside the tubes and water to drain from the porous material. Additionally, depending on the locations and characteristics of the BU or disposal sites, it may be possible to apply some of all of the slurry volume produced directly without dewatering.

A U.S. contractor would perform the dredging and cell design. A Mexican contractor would be responsible for construction and operation of the dewatering cells, and if necessary, transportation of the materials from the dewatering cells to the final destination. On the U.S. side of the river, U.S. Government land would be available for field offices, storage yards, and other construction facilities. Private land would not be

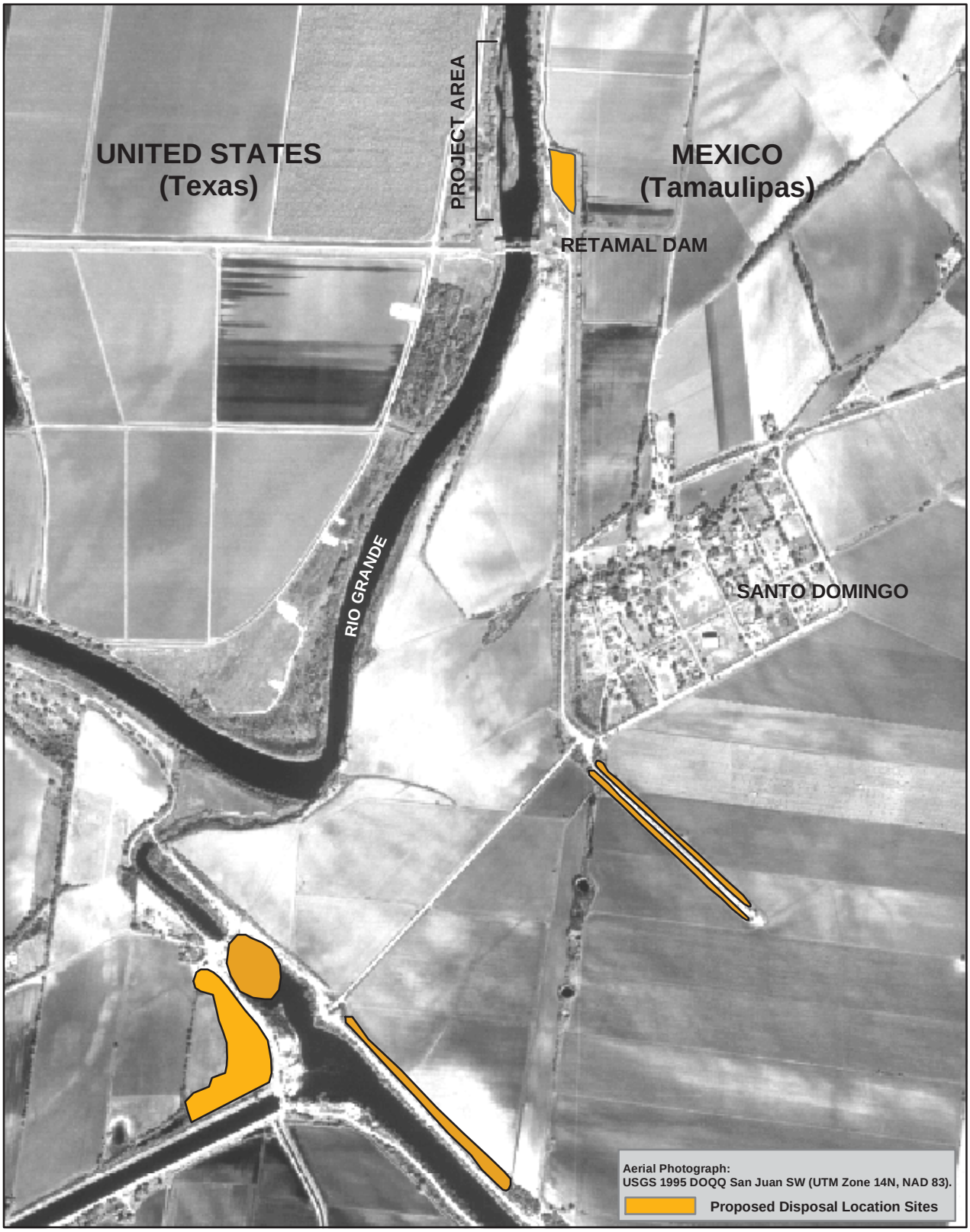
used. Contractor equipment lay-down area would be located in previously disturbed USIBWC owned areas, adjacent to the wildlife refuge area near Retamal Diversion Dam.

Option 1 would include the following activities:

- Clearing all trees, rubbish, and other vegetation as required for access to the Project Area, for the island prior to dredging, and possibly for construction of the temporary cells on the Mexican riverbank. Clearing would be limited to only the areas needed for the project. All vegetation resulting from clearing activities would be deposited on the Mexican riverbank and appropriately disposed by the Mexican Contractor. It is likely the material would be chipped in place on the island and managed along with the dredged sediment.
- Constructing transport piping and dewatering cells for dredged material on the Mexican riverbank, including retention dikes, drainage sumps and piping. The dewatering cells would ideally be located adjacent to the dredging area. It is anticipated that the cells would be located on Mexican Federal Government land adjacent to the river at the dredging location if sufficient area is available. It is likely that a piping system may be set up to transport the slurry mix directly to the final disposal area. The cells would be constructed by first clearing the land area, constructing dikes, and installing a discharge weir and discharge piping and/or structures.
- Setup and launch of dredge and support equipment. Vegetable base or approved biodegradable hydraulic oil would be used. Enough "oil boom" would be maintained in the immediate area to prevent contaminants from moving down stream more than 1 mile from a spill point. Engine room bilge fluids (contaminated oil, fuel, and water mix) would be contained and pumped into drums for legal disposal. No discharge from bilges would be allowed to discharge into the Rio Grande.
- Transporting and placing dredged material on the BU sites.
- Demobilization of dredge and associated support equipment from the site upon completion of the project.
- Restoration of land areas disturbed by project activities.

2.1.2 Mechanical Dredging – Option 2

Approximately 54,000 cy of materials would be removed by mechanical dredging with beneficial use of the excavated materials on the Mexican side of the border. Dredging operations would take approximately 20 to 180 days to complete depending on the production rate. River flow would be maintained at all times during the project work. Figure 2.2 shows the location of the proposed disposal area of the dredged materials. Mechanically dredged sediments typically have near *in-situ* densities (USACE 1983). This would result in a total excavated volume approximately equal to the in-place



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0 200 400 800 Meters

0 600 1,200 2,400 Feet

TRUE NORTH
Magnetic North

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Figure 2.2 Proposed Disposal Location of Dredged Materials

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volume, or 54,000 cy. The sediments would be expected to decrease in volume as they dry and/or are compacted.

The production rates were based on typical reported rates for mechanical dredging (USACE 1983). A mechanical dredge suitable for work at this site would be expected to produce from 30 to 300 cy/hr. The limiting factor for mechanical dredging may be transportation of the dredged sediments. Since a mechanical dredge would not be capable of transporting dredged material to the final destination, other means of transport would be required. Transport from the dredge site would be difficult because of access limitations caused by high, steep riverbanks and non-navigable river section. Direct truck access to the dredge site would most likely not be possible due to the steep terrain. A conveyor system could be used to transport dredged material to the top of the dike, where truck access would be possible. The material would then have to be hauled over the border to the Mexico BU sites. This would require approximately 2,700 truckloads with a capacity of 20-cy.

A U.S. contractor would perform the dredging and a Mexican contractor would be responsible for applying the dredged material to the BU sites. If the dredged materials are barged, a U.S contractor would be responsible for loading, operating, and unloading the barges, and a Mexican contractor would be responsible for trucking on the Mexican side of the river. On the U.S. side of the river, U.S. Government land would be available for field offices, storage yards, and other construction facilities. Private land would not be used. Contractor equipment lay-down area would be located in previously disturbed USIBWC owned areas, adjacent to the wildlife refuge area near Retamal Diversion Dam.

Option 2 would include the following activities:

- Coffer dam (metal or inflatable) construction to de-water alternate sides of the river.
- Operations of Diversion Dam gates to regulate alternate sides of river flow.
- Clearing all trees, rubbish, and other vegetation as required for access to the Project Area, for the island prior to dredging, and possibly for construction of the temporary cells on the Mexican riverbank. Clearing would be limited to only the areas needed for the project. All vegetation resulting from clearing activities would be deposited on the Mexican riverbank and appropriately disposed by the Mexican Contractor. It is likely the material would be chipped in place on the island and managed along with the dredged sediment.
- Potentially constructing a conveyor system on the U.S. or Mexican riverbank.
- Setup and launch of dredge and support equipment. Vegetable base or approved biodegradable hydraulic oil would be used. Enough "oil boom" would be maintained in the immediate area to prevent contaminants from moving down stream more than 1 mile from a spill point. Engine room

bilge fluids (contaminated oil, fuel, and water mix) would be contained and pumped into drums for legal disposal. No discharge from bilges would be allowed to discharge into the Rio Grande.

- Performing the required maintenance dredging at the designated locations within the project footprint. Depending on dredging equipment used, dredging operations would be performed with downstream areas enclosed with silt curtain, Gunderbooms®, or other appropriate means to prevent degradation of turbidity outside the dredging area. Sediments above the river water level may be excavated using traditional earthmoving equipment.
- Transporting and placing dredged material on the BU sites.
- Demobilization of dredge and associated support equipment from the site upon completion of the project.
- Restoration of land areas disturbed by project activities.

A variety of equipment would be used to perform the dredging and support activities. The dredge would likely be powered by a diesel engine, and the conveyors may be electric or diesel powered. There may also be support boats or barges that are diesel or gasoline powered. A crane may be required to put the dredge and support equipment on the river and remove it when the work is complete. There would also be trucks for delivering equipment and supplies to the site, and trucks for hauling dredged material. Bulldozers, chippers, and chainsaws would likely be used for clearing activities. Standard earthmoving equipment could be used to prepare the barge unloading site, and to excavate sediments that are above the water level.

2.2 DESCRIPTION OF THE NO ACTION ALTERNATIVE

The No Action Alternative is to not remove the sandbar and island downstream of the Retamal Diversion Dam. The accumulation of sediment would likely continue in the channel on the U.S. side of the Rio Grande and along the concrete apron beneath the flood gates, thus potentially impairing the ability of the gates to operate effectively to properly control flood events. The main channel in the river could continue shifting toward the Mexican side, potentially changing the boundary location between the two countries.

2.3 DREDGING METHODS OVERVIEW AND DEVELOPMENT

Dredging methods relevant to the Proposed Action can be categorized based on the type of excavation process used and the method of transporting and placement of the excavated material. In general, there are two main categories of excavation techniques, hydraulic dredging and mechanical dredging. Both methods are discussed below.

2.3.1 Hydraulic Dredging

Hydraulic dredges remove and transport sediment in liquid slurry form. Mechanical or hydraulic agitators can be installed to loosen sediment that is then captured with suction lines. Hydraulic dredges are usually barge mounted and carry diesel or electric-powered centrifugal pumps with discharge pipes ranging from 6 to 48 inches in diameter. The slurry is transported by pipeline to a disposal area where the dredge material is allowed to settle out of the slurry, and the clarified water is discharged over a weir (U.S. Army Corps of Engineers [USACE] 1992). Hydraulic dredging generally results in less turbidity in the dredging area compared to mechanical dredging.

The advantage of hydraulic dredging is that it can excavate and move large volumes of sediment quickly. The material can be efficiently transported to dewatering cells at the disposal area. Hydraulic dredging requires less handling of the material from the point of excavation to the disposal area, thereby decreasing the chance of spillage as compared to mechanical dredging, which excavate and transport materials using some type of bucket.

2.3.2 Mechanical Dredging

Mechanical dredges remove bottom sediment through the direct application of mechanical force to dislodge and excavate the material at almost *in situ* densities. Backhoe, bucket (such as clamshell, orange-peel, and dragline), bucket ladder, bucket wheel, and dipper dredges are types of mechanical dredges. Sediments excavated with a mechanical dredge are generally placed into a barge or scow for transportation to the disposal site (USACE 1992).

The advantages of mechanical methods are the ability to excavate harder material than the hydraulic dredge can (including rock), and transport a more solid, dense material (as opposed to slurry) to disposal sites via truck or barge. Mechanically dredged materials typically have near in-place densities, and it may be possible to place them directly at the reuse or disposal site without further dewatering. This is a big advantage over hydraulic dredging, which produces a slurry that typically must be dewatered before the sediments can be reused or permanently disposed. Production rates for mechanical dredges are dependent on the material excavated, the depth of excavation, and the size of the bucket.

For this site, a significant disadvantage to mechanical dredging is the transport of dredge material from the dredging site due to access limitations. Mechanical dredges cannot efficiently transport dredged material, and therefore must place dredged material into a storage site or directly into transportation equipment at the dredging site. Since there is no convenient space for storing material at the dredge site, storage is not considered further for this project. Typically, barges or trucks would be used to transport mechanically dredged material. The steep dike banks would make truck access difficult, and the river may not be navigable for barge traffic during the September to February period. While it may be possible to use barges in the river in the vicinity of the dredge

location, there may not be a convenient place with truck access, preferably on the Mexico-side of the river, for unloading the barges. It may be possible to use a conveyor system for moving the dredged material from the dredge site or barge unloading site to the top of the dikes where there is easier truck access. A disadvantage to using barges for transporting dredged material is that the material must be transferred to trucks for transport to the final BU or disposal location.

Bucket dredges are classified by the USACE as causing high turbidity. Bucket dredges, such as the clamshell, excavate a heaped bucket of material, some of which is washed away during the turbulence of the hoisting operation. Once the bucket clears the water surface, additional material loss occurs through the rapid draining of water. Loss of material is influenced by the fit and condition of the clamshell, the hoisting speed, and the properties of the sediment. Even under ideal conditions, substantial losses of loose and fine sediments will occur. Watertight buckets have been developed to minimize turbidity generated by the clamshell operation. Watertight buckets generate 30-70 percent less turbidity in the water column than typical buckets, primarily due to a 35 percent reduction in leakage of dredged material.

A second method to reduce turbidity around the clamshell dredge involves placing a silt curtain downstream or around the dredging operation. Silt curtains are impervious, vertical barriers that extend from the water surface to a specified depth. The flexible polyester-reinforced vinyl fabric forming the barrier is maintained in a vertical position by floatation material at the top and a ballast chain along the bottom. The curtain pieces are manufactured in 100-foot sections which are joined at the site.

2.3.3 Dredge Material Disposal Options

The three primary placement or disposal options for excavated materials are shown below:

- Open water disposal.
- Confined disposal.
- Beneficial use.

Open Water. Open water disposal is the placement of dredged material back into the rivers, via pipeline or release from hopper dredges or barges. The potential for environmental impacts is affected by the physical behavior of the open water discharge. Physical behavior is dependent on the type of dredging and disposal operation used, the nature of the material (physical characteristics), and the hydrodynamics of the disposal site (USACE 1992).

Open water disposal would involve placing excavated material back into the Rio Grande at another location. This is not recommended since adding sediment back into the river may cause or exacerbate problems downstream. Open water disposal is thus eliminated from consideration.

Confined Disposal. Confined disposal is the placement of dredged material within diked or upland confined disposal facilities via pipeline or other means. Confined disposal facilities may be constructed as upland sites, nearshore site with one or more sides in water, or as island containment areas (USACE 1992).

Upland confined disposal could be accomplished by constructing a diked facility to separate, store, and dewater the excavated material. The diked area would allow sediment to collect in the bottom and clarified water to exit over a weir or pumped from a sump collection system. Dredge material could be piped to containment cells on the Mexican side of the river for dewatering. Permanent storage/disposal could be at a different location.

Beneficial Use (BU). Beneficial use includes a wide variety of options, which utilize the material for some productive purpose. Dredged material can be a manageable, valuable resource. Broad categories of possible beneficial uses include:

- Habitat restoration/enhancement.
- Aquaculture.
- Parks and recreation.
- Agriculture, forestry, and horticulture.
- Shoreline stabilization and erosion controls.
- Construction and industrial use.
- Material transfer (fill, dikes, levees, parking lots, and roads), and
- Multiple purpose.

Beneficial use of the dredge material has been identified on the Mexican side of the border. Since the material has been chemically tested and found to be suitable for BU, no special provisions would be required concerning disposal of the material in Mexico (USIBWC 2003b). In the case of hydraulic dredging, dredge material would be piped to temporary holding cells on the Mexican side of the river for dewatering. After dewatering, the material would be available for BU. The holding cells would be sized accordingly to allow the dredged material to settle out of the slurry, and allow the clarified water to be discharged. In the case of mechanical dredging, the dredged material will have a much lower water content, and may not require any dewatering prior to BU.

2.4 DESCRIPTION OF PAST AND REASONABLY FORESEEABLE FUTURE ACTIONS

Complete environmental impact analysis of the Proposed Action and alternatives must consider cumulative impacts due to other actions. A cumulative impact, as defined by the CEQ (40 CFR 1508.7), is the "impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably

foreseeable future actions regardless of which agency (federal or non-federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." USIBWC staff identified one other past and reasonably foreseeable action that would occur concurrently with the Proposed Action.

The USIBWC reviewed a number of reasonably foreseeable actions and determined that there would be cumulative effects from three different projects:

- Operation Rio Grande by the ICE (formerly the INS);
- Brownsville Weir and Reservoir Project (BWR Project); and
- Alternative Vegetation Management Practices for the LRGFCP.

Operation Rio Grande and the Alternative Vegetation Management Practices for the LRGFCP are currently undergoing the NEPA review process. Brownsville Public Utilities Board (BPUB) has submitted an EA to the Texas Commission on Environmental Quality (TCEQ), formerly known as Texas Natural Resource Conservation Commission, describing proposed plans for the BWR Project. Based on reviews and understanding of these projects, the proposed activities would not be conducted in the vicinity of the Project Area and therefore, there would be no cumulative impacts associated with the Proposed Action.

2.5 ALTERNATIVE DISMISSED

Other related actions, which could occur concurrently with the Proposed Action, include the shoring up of the banks along the Mexican side of the Rio Grande directly across from the Project Area. Since this action is outside the jurisdiction of the USIBWC and boundary of the U.S, the analysis will not be included in the EA.

2.6 COMPARISON OF ENVIRONMENTAL EFFECTS OF ALL ALTERNATIVES

Table 2.6-1 is a summary of the potential impacts of the Proposed Action and the No Action Alternative on the natural and man-made environment.

Table 2.6-1 Summary of Environmental Impacts

Resource (Applicable EA Section)	Proposed Action Option 1	Proposed Action Option 2	No Action Alternative
Water Rights (Section 4.1)	Approximately 1,200 acre-feet of water rights would be needed for dredging operations to occur. Additional amounts will likely be necessary to allow for contingencies. Hydraulic dredging operations could not occur without water acquisitions. Currently, there are no U.S. water rights available. Water would have to be temporarily supplied by Mexico or purchased from water right holders.	Water rights would not be required; therefore, impacts would not be expected.	There would be no impact on water rights.
River Hydrology (Section 4.2)	Long-term impacts would be negligible, as the Proposed Action would re-establish design channel configuration created during dam construction.	Impacts associated with implementation of Option 2 would be the same as those described under Option 1.	The main channel in the river could potentially continue to shift toward the Mexican side of the international boundary.
	Dredging activities would not appreciably improve flood containment capacity. Modeling results indicate an approximate 0.05 foot increase in flood containment capacity would be achieved by dredging. Hydraulic dredging operations will result in less turbidity than mechanical dredging (Option 2).	Impacts associated with implementation of Option 2 would be the same as those described under Option 1.	The accumulation of sediment would likely continue in the channel on the U.S. side of the Rio Grande and along the concrete apron beneath the flood gates, thus potentially impairing the ability of the gates to operate effectively to properly control flood events. Further modification to international boundary would likely occur as the river continues to cut into the Mexican side of the river bank. Long-term maintenance would likely be required to assure channel configuration is maintained in the future.

Table 2.6-1 Summary of Environmental Impacts (*…continued*)

Resource (Applicable EA Section)	Proposed Action Option 1	Proposed Action Option 2	No Action Alternative
	Dredging activities would result in re-establishment of international boundary. Long-term maintenance would likely be required to preserve boundary, to address re-occurring island formation and related sediment accretion at the dam apron, and to assure channel configuration is maintained in the future.	Impacts associated with implementation of Option 2 would be the same as those described under Option 1.	Currently, there is no appreciable impact to flood containment capacity. Bank stabilization (armoring with rip-rap) on the Mexican side would likely re-establish the former bank extent and international boundary.
Water and Dredge Material Quality (Section 4.3)	Potential short term impacts total suspended solids (TSS) would be mitigated using BMPs during dredging operations.	Impacts associated with implementation of Option 2 would be the same as those described under Option 1.	No impacts would occur from the baseline activities.
Soils and Geology (Section 4.4)	Approximately 54,000 cy of fluvial terrace deposits (sandbar and island) would be removed. Short-term minor surface disturbances would occur at the contractor equipment lay down areas.	Impacts associated with implementation of Option 2 would be the same as those described under Option 1.	No impacts would occur from the baseline activities.
Wetlands (Section 4.5)	The Proposed Action would eliminate 2.1 acres of Riverine wetlands by dredging. Mitigation would be conducted to offset loss of jurisdictional wetlands. Heavy sediment loads and variable water regimes of the Rio Grande would continue to provide a source and means for sediment build-up.	Impacts associated with implementation of Option 2 would be the same as those described under Option 1.	A potential increase in wetlands could occur over time. Sediment accretion and subsequent colonization by early successional species would likely occur between the current island and US bank as well as longitudinally. Heavy sediment loads and variable water regimes of the Rio Grande would continue to provide a source and means for sediment build-up.

Table 2.6-1 Summary of Environmental Impacts (*…continued*)

Resource (Applicable EA Section)	Proposed Action Option 1	Proposed Action Option 2	No Action Alternative
Vegetation (Section 4.6)	The Proposed Action would eliminate 2.3 acres of Riverine vegetated island by dredging.	Impacts associated with implementation of Option 2 would be the same as those described under Option 1.	A potential increase in wetlands could occur.
Wildlife (Section 4.7)	The Proposed Action would eliminate 2.3 acres of vegetated island of which 2.1 acres is Riverine wetlands. Localized negative impacts to wildlife would occur.	Impacts associated with implementation of Option 2 would be the same as those described under Option 1.	A potential increase in wetlands could occur. Sediment accretion and subsequent colonization by early successional species would likely occur between the current island and U.S. bank as well as longitudinally.
Threatened and Endangered Species (Section 4.8)	The Proposed Action is not likely to impact threatened and endangered (T&E) species near the Project Area. Although there is a possibility of T&E species within the Project Area, the Proposed Action is not likely to affect listed species.	Impacts associated with implementation of Option 2 would be the same as those described under Option 1.	No impacts would likely occur from the baseline activities.
Aquatic Resources (Section 4.9)	A decrease in aquatic diversity would occur due to dredging operations. Although the amount of backwater habitat is small (<1 acres), the limited amount of diverse aquatic habitat in the LRGV accentuate the importance of relatively small impacts. Fish would be minimally affected by dredging activities. Due to their mobile nature, fish would be able to avoid the dredging equipment and sustain no long-term ill effects from the Proposed Action.	Impacts associated with implementation of Option 2 would be the same as those described under Option 1.	A potential increase in backwater habitat and aquatic diversity would occur.

1 **Table 2.6-1 Summary of Environmental Impacts (*…continued*)**

Resource (Applicable EA Section)	Proposed Action Option 1	Proposed Action Option 2	No Action Alternative
Air Quality (Section 4.10)	Construction activities would result in the generation of air pollutant emissions during the construction period. The emissions would be temporary and would cease after completion of the activity. Therefore, the air emission impacts from the construction activities associated with the Proposed Action would not be considered significant.	Impacts associated with implementation of Option 2 would be the same as those described under Option 1.	No impacts would occur from the baseline activities.
Noise (Section 4.11)	Construction noise would be temporary, occurring only during daytime, and would cease when the project is completed. Outdoor noise from construction activity 50 feet from the noise source could be as high as 75 to 89 dB. Impacts to the noise environment would not be considered significant.	Impacts associated with implementation of Option 2 would be the same as those described under Option 1.	No impacts would occur from the baseline activities.
Cultural Resources (Section 4.12)	No archaeological or historical resources of cultural significance were identified within the Project Area according to previous cultural resource investigations within the Project Area or within a 1-mile radius.	Impacts associated with implementation of Option 2 would be the same as those described under Option 1.	No impacts would occur from the baseline activities.

Table 2.6-1 Summary of Environmental Impacts (*…continued*)

Hazardous and Toxic Waste (Section 4.13)	Hazardous and toxic products (e.g., oil, grease, and hydraulic fluid) would be used in the heavy-duty dredging equipment during the proposed dredging. Standard industry practices regarding spill prevention should prevent any impact to the local environment. No impacts from hazardous and/or toxic waste would be expected from the proposed activities. No listed hazardous and/or toxic waste sites are known to occur in the Project Area.	Impacts associated with implementation of Option 2 would be the same as those described under Option 1.	No impacts would occur from the baseline activities.
Socioeconomics (Section 4.14)	Changes in population, housing, and community infrastructure would not occur. Beneficial effects to employment would occur during the construction period; however, the benefits would be short-term and would not measurably affect the county-wide unemployment rate. The project would generate income to the local economy; however, the amount would be small compared to the county's total income; therefore, beneficial effects to Hidalgo's economy would be negligible.	Impacts associated with implementation of Option 2 would be the same as those described under Option 1.	No impacts would occur from the baseline activities.
Environmental Justice (Section 4.15)	Data indicate that Hidalgo County has disproportionately high minority and low-income populations; however, land use adjacent to the Project Area is primarily rural and designated a wilderness area. Adverse consequences to disproportionately high minority and low-income populations resulting from construction activities associated would not occur.	Impacts associated with implementation of Option 2 would be the same as those described under Option 1.	No impacts would occur from the baseline activities.

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SECTION 3
AFFECTED ENVIRONMENT

This section describes the resources in the Project Area that form the basis for evaluation of the potential environmental impacts of the Proposed Action and the No Action Alternative. Resource areas described in this section correspond to the range of resource areas addressed in Section 4, "Environmental Consequences."

3.1 IMPORTANT FEATURES OF THE PROJECT AREA

Retamal Diversion Dam is located just south of Weslaco, Texas. The dam is not a daily operational structure and is only operated in the event floodwaters need to be diverted to the Mexican interior floodway. The dam has three flood gates and the center gate is operated manually. The gates are tested once per month to ensure operability. Maintenance personnel from both countries conduct normal maintenance once a week.

The Project Area (Figure 2.1) includes the U.S. portion of a sandbar and vegetated island that extends 1,407 feet from the downstream side of the Retamal Diversion Dam and east to the international boundary (approximately 4 acres in size). Adjacent lands to the Project Area includes USIBWC managed lands west of the sandbar and vegetated island on the river terrace (approximately 7 acres in size) and the United States Fish and Wildlife Service (USFWS) Lower Rio Grande Valley National Wildlife Refuge, La Coma Tract.

USIBWC property adjacent to the Project Area consists mostly of the former dam construction site, which included a temporary water diversion channel (backfilled upon dam completion). Approximately 450 feet downstream of the dam apron, the U.S. river bank is armored with riprap. Beyond the bank armoring, a riparian margin approximately 100 feet wide extends beyond the island.

The wildlife area is a large system of noncontiguous tracts of protected land managed by the USFWS to conserve habitat and wildlife, including endangered plant and animal species. The Texas Parks and Wildlife Departments Las Palomas Wildlife Management Area (WMA) – McManus Unit is less than 1 mile northwest of the dam.

The LRGRCP is comprised of a variety of features that protect life and property in the LRGV against Rio Grande floodwaters. Maintenance programs designed to protect these features include levee maintenance and channel and floodway maintenance.

3.2 WATER RIGHTS

Unlike elsewhere in Texas where water is a flow resource, surface water in the Rio Grande below Amistad is a stock resource meaning that water accumulates in Amistad and Falcon reservoirs and is released on demand. Amistad and Falcon reservoirs are considered one system with water frequently released from the upstream dam (Amistad) to replenish Falcon reservoir and meet the demands in the Lower Rio Grande Valley. The Rio Grande

Watermaster is the authorized agent allowed to request releases of U.S. water held in storage at both reservoirs (Rubenstein 2002).

Water rights and distribution in the Rio Grande are based on two factors: 1) the maximum volume assigned by law to each water right holder, by use; and 2) priority of the use. All water rights have a maximum annual allowable, but because the total legal demand for water always exceeds the supply, only the highest priority uses receive the full amount of their water right. The following are the weighted priorities:1) domestic municipal and industrial uses (highest priority), 2) operational, and 3) carry over balances for irrigation water accounts. In order to provide for and protect this municipal based priority system the watermaster divides all U.S. waters held in storage at Amistad/Falcon into three distinct pools. The highest priority pool is the water reserved for all municipal uses. It is reestablished monthly to cover roughly 1 years' average municipal diversions (225,000 acre-feet). The second highest priority pool, reestablished monthly, is water held in reserve (75,000 acre-feet) to cover in system losses and ensure conveyance of water even in periods of low flow and drought. The lowest priority pool is reserved for agricultural interests and consists of leftover water after the Municipal and Operating pools have been reestablished. This irrigation water pool consists of leftover irrigation storage that has not been used and new net inflows. This priority-based system also mandates that municipal water be treated differently from irrigation in the allocation process. At the beginning of the calendar year, each municipal water right holder's account is replenished to its full amount. No leftover water is rolled over to the new year. Agricultural accounts on the other hand are replenished only when monthly inflows are in excess of losses and the water needed to reestablish the Municipal and Operating reserves (Rubenstein 2002).

According to the TCEQ Rio Grande Watermaster, there are currently no U.S. water rights available (Rubenstein 2003).

3.3 RIVER HYDROLOGY

3.3.1 Water Regimes

The flow of the Rio Grande is highly variable and tightly managed. In the Project Area and surrounding areas, flow is dictated by the needs of agriculture and crop watering schedules. September to February is the period with the lowest flow in the Project Area.

The other major items that impact flow in the Rio Grande are water storage and storms. There are two large reservoirs on the lower Rio Grande, International Amistad Reservoir, near Del Rio, TX and International Falcon Reservoir, near Laredo, TX. These reservoirs store water for public water supply, recreational activities as well as holding stormwater surges. There are approximately 500 irrigation and drainage structures that regulate flow and 270 miles of levees to manage stormwater and channel flow into and out of diversions and floodways.

Low water flow conditions characterize the river with little potential for improvement. Increased water demands from a growing urban and industrial population, reduced riparian

habitat and ground cover, proliferation of exotic aquatic vegetation, and recent drought conditions, have contributed to severely reduced flows. Water within the Rio Grande is currently fully allocated with agricultural use constituting 82 to 90 percent of the water in the LRGV (USIBWC 2002).

Over the past 6 years, noxious aquatic plants, primarily hydrilla (*Hydrilla verticillata*) and waterhyacinth (*Eichornia crassipes*) have seriously impacted the LRGV and Project Area. In 1998, weed infestation was cited as the worst on record in the LRGV. The effect of aquatic vegetation includes restricted water delivery, inaccurate water accounting, and water loss through evapotranspiration. The Texas Watermaster and LRGV District Managers Association reported that infestations of aquatic vegetation were the main contributors to excessive water loss (Grodowitz *et al.* 2001).

River elevation is influenced by upstream dams and fluctuates due to irrigation deliveries, withdrawals, and flood events. A number of variables influence river elevation such as flow rates, aquatic vegetation, channel configurations (*e.g.* the island). Calculated average river elevations downstream of Retamal Dam is presented in Table 3.3-1 (USIBWC 2003b).

Table 3.3-1 Average Flow and Calculated River Elevations

Years 1990-2003	Average Flow (cfs)	River Elevation (ft) Calculated Using HEC-RAS
January	1,088	60.32
February	1,232	60.73
March	1,298	60.92
April	2,179	61.71
May	2,486	62.01
June	2,635	62.15
July	1,695	61.19
August	1,526	61.00
September	798	60.23
October	752	60.01
November	586	59.83
December	615	59.97

3.3.2 Sedimentation

The Rio Grande flows though an arid region with soils composed primarily of sand. Results of sediment samples taken at the Project Area show that they are composed of 66.5 percent sand, 21.9 percent silt, and the remaining 11.6 percent clay. These types of sediments are highly transportable by stormwater and even normal flow rates can move large quantities of this type of sediment.

Sediments are deposited in calm areas where flow rates are low. Below the Retamal diversion dam is such an area. The Retamal structure is located in a bend of the river. The flood gates are operated to allow a design flood flow of 20,000 cfs to pass during times of storm flow and divert excess waters (105,000 cfs) into the Mexican interior floodway.

In general, flow rates in rivers are greater on the outside of any riverbend. Therefore, flow rates on the insides of riverbends are calmer, and tend to collect sediment. The Retamal Dam structure may have exacerbated the sediment collection process downstream of the dam, thus causing the formation of the island whose removal is the action addressed by this assessment. Alternatively, some erosion of the upstream point has occurred based on comparison of 1996 ortho imagery and 2003 ground survey.

3.3.3 Flood Control

The Project Area is located within the Special Flood Hazard Area (SFHA), FEMA Zone A, which is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by approximate methods. The last time the flood control gates at Retamal Diversion Dam were used to divert flood waters was during the Mexican flood in 1988 as a result of Hurricane Gilbert.

The normal dam operating water surface elevation is approximately 61 feet MSL during the non-irrigation season, or approximately 6 feet above the channel invert elevation. Using the HEC-RAS hydrologic model, the design flood flow (20,000 cfs) elevation is approximately 83.76 feet MSL.

3.4 WATER AND DREDGE MATERIAL QUALITY

3.4.1 Water

The headwaters of the Rio Grande originate in the San Juan Mountains of Colorado and flow 1,885.41 miles to the Gulf of Mexico. The floodplain is approximately 6.2 miles wide in Hidalgo County and widens into a delta in eastern Cameron County. A small portion of surface water from the LRGV flows into the Rio Grande. The majority of water flows northeast into storm water systems, which drain into the Laguna Madre (USIBWC 2003d).

Due to the basin's size and wide range of geologic and climatic conditions, the water quality of the Rio Grande varies greatly. Most of the flow of the Rio Grande is diverted for irrigation and municipal uses at the American Canal in Texas and the Acequia-Madre Canal in Mexico before it reaches El Paso. Downstream of El Paso, most of the flow consists of treated municipal wastewater from El Paso, rainfall runoff and irrigation return flow.

Flow increases again at Presidio/Ojinaga where inflow from Mexico's Rio Conchos enters the Rio Grande. The presence of metals and pesticides has been identified sporadically throughout the Rio Grande Basin. Elevated fecal coliform densities occur in the river downstream of major US-Mexico border cities due to municipal waste treatment facilities in Texas and untreated wastewater in Mexico. Downstream of International Falcon Dam, the river does not meet state contact recreation standards due to elevated fecal coliform levels.

Chloride, sulfate, and total dissolved solids concentrations are increasing in the Rio Grande due to repeated use of water for irrigation, especially in the west Texas portion of the basin. Water quantity as well as quality is an issue in this basin. High demands for irrigation and drinking water by both the United States and Mexico and an extended drought have caused a reduction in available water (TNRCC 2002).

Some water chemistry and physical measurements have been collected near the project site since 1995. Although water analysis was not directly included in the sediment and sampling analysis performed for this environmental assessment, the site water was analyzed by default because site water was used to mix with the sediment to perform the elutriate analysis, which had no exceedances of TCEQ criteria as discussed in subsection 3.4.2.

There has been limited historical water quality monitoring near the Project Area. Station ID 13180 listed in the Draft 2002 Texas Water Quality Inventory is representative of the Rio Grande from Pharr International Bridge to downstream of the Santa Ana Wildlife Refuge in Hidalgo County. Station 13180 is located only a few miles upstream of the Project Area. The Water Quality Inventory data states that on the river stretch near the project site there is a concern for high levels of chloride, sulfates, total dissolved solids. It may be used as a finished water supply and not used for contact recreation due to high fecal coliform levels. The data also notes a fish kill of approximately 150 fish, near the Santa Ana Wildlife Refuge due to low dissolved oxygen levels on August 31, 1999 (TCEQ 2002a).

3.4.2 Dredge Material

Evaluation of the physical characteristics of dredge material is necessary to determine potential environmental impacts of disposal, the need for additional chemical or biological testing, as well as potential BU of the dredged material (USEPA 2002). The initial screening for contamination was designed to determine if the material contains any contaminants in forms and concentrations likely to cause unacceptable impacts to the environment. Field studies and sediment samples were collected in June 2003 at the Project Area (USIBWC 2003b). Chemical analysis of the dredge material provided data concerning background levels of specified potential pollutants. Analysis of the elutriate samples was conducted to assess expected release of potential pollutants from the sediment into the water column or as runoff from surface disposal of sediments. Analytical results of the sediment and elutriate samples are presented in Appendix B.

Results of all sediment and soil samples were below the TCEQ Tier 1 Sediment Protective Concentration Limits (PCL) for direct human contact indicating no sediment contaminants of concern (TCEQ 2002b; TCEQ 2003a; TCEQ 2003b).

Analysis of the sediment samples indicated that sand-sized particles dominated all grain size distributions, with samples having sand content from 64 to nearly 88 percent. Samples contained from 7 to 27 percent silt and from 3 to 14 percent clay-sized particles (USIBWC 2003b).

3.5 SOILS AND GEOLOGY

3.5.1 Soils

Most soils in the Project Area and the LRGV are the Southern Gulf Coastal Plains Province, which consists of nearly level to undulating soils of the Rio Grande Plain. Loamy soils and cracking clayey soils of the Rio Grande floodplain (Rio Grande-Matamoras soils) are found along the river from Brownsville to the Falcon Reservoir, while the Harlingen soil association forms the Rio Grande terraces in Cameron and parts of Hidalgo counties (Godfrey *et al.* 1973).

Soils in the Project Area are mapped as Zalla Loamy Fine Sand, Undulating, which are deeply drained soils on slopes from 0-3 percent. Bedding planes are weakly expressed, with alternating layers of sands and loamy sands. The Zalla Loamy Fine Sand is a hydric soil, with severe leaching and a moderate surface loss potential (USDA, NRCS 2003).

3.5.2 Geology

Hidalgo County topography is nearly flat to gently sloping. Elevation ranges from 40 feet above sea level on the eastern portion of the county, to 375 feet above sea level on the western side. General drainage is to the northeast with the exceptions of areas around La Joya Creek in the southwest (drainage to the south) and the Rio Grande floodplain (drainage to the east; USIBWC 2003d).

The Project Area has elevations ranging from approximately 46 to 90 feet above MSL. Elevation is highest along the riverbanks and center of the island. The riverbanks are approximately 20 feet above the river channel with a stepped slope ranging from 45-60 degrees.

The geology of the Project Area consists mainly of alluvium and terrace deposits with some sandstone and clay outcrops. The alluvium deposits are divided into sections that are predominantly mud, silt and sand, or a combination of all three. The sand is mostly quartz and the silt is dark gray to dark brown and calcareous. The fluvial terrace deposits are composed of gravel, sand, silt, and clay, similar in composition to the contiguous alluvium (USIBWC 2003d).

The sandstone and clay outcrops are from the Jackson Group and the Yegua and Laredo Formations. The Jackson Group is approximately 360 feet thick. The sandstone of the Jackson Group is commonly laminated and cross-bedded, white, gray, greenish brown or light brownish yellow, and fossiliferous. The clay deposits are sandy, calcareous, and greenish gray, pink, or red. Silicified wood is abundant in the Jackson Group. Some beds of white volcanic ash are present and limestone concretions are common. The Yegua Formation is approximately 400 feet thick and consists mostly of clay deposits. These deposits are chocolate brown to reddish brown and lighten upward. They produce a dark-gray soil. The sandstone is mostly quartz with some chert and weathers to loose, yellow-orange and reddish-brown soil. The Laredo Formation is approximately 620 feet thick and consists of thick, very

fine to fine grained sandstone members in the upper and lower parts with clay in the middle. The sandstone members are predominantly red and brown. The clay weathers orange-yellow. Dark gray limestone concretions are common (USIBWC 2003d).

3.6 WETLANDS

Riparian areas along the lower reaches of the Rio Grande have been identified by the USFWS and Texas Parks and Wildlife Department (TPWD) as areas where wildlife habitat is rapidly vanishing and in need of protection (FWC 2001; University of Texas-Pan American 1995).

Considerable alteration of the riparian corridor area has occurred through a variety of events, including:

- Hydrologic modifications from dam construction, water diversions, and flood control levees;
- Geomorphic modifications due to changes in sediment transport, erosion, and other processes;
- Land use changes throughout the Rio Grande Valley; and
- Exotic vegetation, terrestrial and aquatic (FISRWG 1998).

Approximately 4,178 acres of palustrine, lacustrine and riverine wetlands occur in the LRGV, as shown in Table 3.6-1. Palustrine wetlands cover 3,961 acres (95 percent), lacustrine 165 acres (4 percent), and riverine 52 acres (1 percent).

Table 3-6-1 Wetlands within the LRGV

Wetland Type	Acres	Percentage
Palustrine		
forested	2,151	52
scrub-shrub	740	18
emergent	432	10
open water	638	15
Lacustrine	165	4
Riverine	52	1
TOTAL	4,178	100

Source: NWI Maps (1989)

Palustrine

Palustrine systems are all nontidal wetlands dominated by trees, shrubs, and other vegetation. Palustrine systems constitute the majority of wetlands in the Project Area and are commonly found around resacas and riparian habitat along the Rio Grande.

Lacustrine

Lacustrine systems are composed of deepwater habitats and associated wetlands situated in topographic depressions or dammed river channels. Lacustrine wetlands are common in the Project Area and are associated with the open water of resacas, ponds, lakes, reservoirs, and settling basins.

Resacas are old, abandoned river channels that measure from 1 to 6 feet deep and 30 to 150 feet wide. Resacas may hold water forming an oxbow lake or only hold water for part of the year. Oxbow lakes that were formed by the meandering of the Rio Grande are called a "banco." The term "resaca" is used to describe channels that have considerable linear extent. Some people do not differentiate between the two and use the term "resaca" to describe either situation. Resacas were traditionally refilled when the Rio Grande flooded, but now must rely on rainfall and runoff for recharge. Cattails (*Typha latifolia*) and willows often dominate the resacas (Ramirez 1986).

Riverine

Riverine systems are all wetlands and deepwater habitats within a river channel. The Rio Grande is the dominant riverine system in the LRGV. Wetlands in the Project area are riverine and occur on the island downstream of Retamal Dam and riparian margins of the Rio Grande. Wetlands on the island are dominated by arundo and black willow. The wetland margin on the Rio Grande ranges in width from 10–30 feet and typically found below 63 MSL. Table 3.6-2 presents jurisdictional wetlands within the Project Area.

Table 3.6-2 Project Area Wetland Summary

Vegetation Community	Jurisdictional Determination	Area (ac)	Comments
Vegetated Island			
Arundo flats	Riverine Wetland	0.37	Recent (< 25 years) fluvial deposits, dominated by FAC+ species. Unconsolidated substrate/detritus and mucky sand. LRR A4 "hydrogen sulfide indicator." Waterward of OHWL.
Arundo-Salix	Riverine Wetland	1.73	Recent (< 25 years) fluvial deposits, dominated by FAC+ FACW species. Unconsolidated substrate/sand. LRR A4 "hydrogen sulfide indicator." Mostly waterward of OHWL.
Salix-Celtis	Non-wetland	0.20	Recent (< 25 years) fluvial deposits, dominated by FAC/FACW species. Hydrology and hydric soil indicators not present. Landward of OHWL. Soil boring to 7 ft. until moist sand found

Table 3.6-2 Project Area Wetland Summary (…*continued*)

Vegetation Community	Jurisdictional Determination	Area (ac)	Comments
Riparian Margin			
Riprap	Non-wetland	0.33	Granite riprap and concrete apron
Salix-Fraxinus	Palustrine Wetland	0.34	Waterward of OHWL. LRR S6 Stripped matrix indicator
	Non-wetland	0.57	Fluvial deposits Landward of OHWL dominated by FACW species. Hydric soil indicators mostly not present (some variability). Potentially beyond USIBWC boundary for the northern areas of the community.
Seasonally Submerged Sandbar (Rio Grande)	Riverine open water/unconsolidated shore	1.40	Waters of the United States (waterward of OHWL and mostly open water).
Total Wetlands		**2.44**	
Total Area		**4.94**	

Source: USIBWC 2003b, modified.

3.7 VEGETATION

3.7.1 Natural Regions

The Project Area is within the Tamaulipan region of southern Texas and northeastern Mexico. The diversity of vegetation along with warm average temperatures in the Tamaulipan region creates one of the richest examples of habitat in the United States and Canada. Annual rainfall amounts in the area ranges from 16 to 35 inches increases from west to east. Average monthly rainfall is lowest in January and February, and highest during May or June.

Temperatures in this region are high in the summer. The soils at the South Texas Brush country natural region are clays and clay loams. Soil reactions vary from alkaline to slightly acidic.

Thorny brush is the predominant vegetation type in the region, including mesquite, acacia, prickly pear, and mimosa, among others. Areas of shallow soils and rapid drainage generally support this plant life. A grassland or savanna type vegetation which also occurs was somewhat more extensive in the 19th century and earlier, but long continued grazing and other factors have altered the plant communities to such a degree that ranches of the region now face a severe brush problem.

3.7.2 Vegetation

The vegetation communities within the Project Area are dominated by early successional species. The riparian margin immediately downstream of the riprap represents

more structurally diverse habitat but heavily influenced by opportunistic arundo (*Arundo donax*).

Island Three subtypes of island vegetation community include, Arundo flats, Arundo-Salix and Salix-Celtis.

Arundo Flats Monotypic uneven aged stands of arundo. Overstory and understory are dominated by arundo with black willow contributing. Occasional cutgrass (*Leersia oryzoides*) is found in the herbaceous strata. The substrate is highly unconsolidated as a result of organic and sediment deposition between the island and U.S. riverbank.

Arundo-Salix Dominant vegetation community of the island. The overstory and understory are characterized by arundo and black willow with occasional cutgrass, umbel sedge (*Carex umbellate*) and arundo in herbaceous strata. The vegetation is impenetrable at places and the water table is near or at the surface with soils saturated to the surface.

Salix-Celtis This community represented the higher areas of the island (more than 63 feet above MSL) with black willow and sugar berry (*Celtis laevigata*) being the dominant overstory species. The understory is diverse with black willow, green ash (*Fraxinus pennsylvanica*) and anacua (*Ehertia anacua*) contributing. The herbaceous strata includes umbel sedge, Florida paspalum (*Paspalum floridanum*) and old mans beard (*Clematis drummondii*). Structural diversity, elevation, and unsaturated soil differentiated this community from the Arundo-Salix community. The substrate is composed of unsaturated sand.

Riparian Three subtypes of riparian community are present: Riprap, Salix-Fraxinus and Arundo. The majority of the riparian community is outside the USIBWC properties boundary (based on survey plats), however, the USIBWC does have legal authority over the "bed and banks" of the Rio Grande. As a result, some of the riparian areas outside the USIBWC property are nevertheless under USIBWC authority. Descriptions of the riparian community are below.

Riprap Riprap represented the armored bank beginning at the dam apron and extending 450 feet downstream. The riprap is overgrown with common bermudagrass (*Cynodon dactylon*), bufflegrass (*Pennisetum ciliare*) with occasional woody vegetation including, retama (*Parkinsonia aculeate*), nicotine tree (*Nicotiana glauca)* and black willow.

Salix-Fraxinus The riparian community was likely disturbed during dam construction (diversion channel construction) and represents growth within the previous two decades. A drift line (at 63 feet MSL) tended to separate wetlands from non-wetlands. Waterward of the overhead water line (OHWL), overstory species were dominated by black willow with green ash contributing. The understory species included green ash, buttonbush (*Cephalanthus occidentalis*) and arundo. The

herbaceous strata includes arundo, poison ivy and umbel sedge. Landward of the OHWL, overstory species are dominated by black willow with green ash and sugarberry contributing. The understory species include sugarberry, black willow, and arundo. The herbaceous strata includes arundo and pepper vine (*Ampelopsis arborea*).

Arundo The community is monotypic even-aged stands of arundo on the river terrace. As an invader species, arundo has colonized disturbed areas on the higher terraces of the riparian community. Vegetation is impenetrable at some locations, with no evidence of hydrology or hydric soil indicators. The area is mostly within the USFWS boundary.

Oldfield Diverse herbaceous community established on disturbed soil. The area is upon overburden used to fill the temporary water diversion channel excavated during dam construction. Elevation of this area was brought to grade leaving little indication of former excavation. Dominant species within the herbaceous strata include bufflegrass, common bermudagrass, and sand dropseed (*Sporobolus cryptandrus*). Scattered woody species include husisach (*Acacia farnesiana*) and retama (*Parkinsonia aculeate*).

Salix-Acacia Parkland community established within the temporary water diversion channel (abandoned concrete columns still remain in the area). Elevation of this area was not brought to grade resulting in the site being 8 to 10 feet below grade. Although below grade, the area is well drained and dominated by black willow and husisach. Heavy herbaceous cover includes sand dropseed and bufflegrass. (See Table 3.7-1 for the classification of vegetation communities.)

Table 3.7-1 Vegetation Community Summary

Vegetation Community	Species Diversity	Structural Diversity	Relative Abundance
Island-(Arundo-Salix and Salix-Celtis)	Low richness-dominated by early successional species of black willow and arundo. Higher elevations include more sugarberry and others.	Moderate with overstory and understory. 80% bare ground/mud. More structural diversity in higher elevations with herbaceous and vine components.	Common riparian community along Rio Grande. Perhaps greater significance is the aquatic diversity island provides (shallow water and back water habitats).
Riparian (Salix-Fraxinus)	Relatively high species diversity yet marked by early and mid sere species. Many areas dominated by arundo and black willow.	Good structural diversity with overstory, understory and herbaceous/vine components. Mature trees > 25 years lacking. Riparian width somewhat narrow < 60 feet	Common riparian community along Rio Grande. Wetland conditions below the 63 feet MSL (drift line).

Table 3.7-1 Vegetation Community Summary (…*continued*)

Vegetation Community	Species Diversity	Structural Diversity	Relative Abundance
Arundo	Monotypic stands of arundo.	Understory and herbaceous > 90% arundo. Very dense and difficult to navigate through without machete.	Common. Arundo is an opportunistic species and frequently invades disturbed areas.
Oldfield	High number of herbaceous species (>16 recorded during visit) found on sandy loam overburden. Common Bermuda, buffle grass and sand dropseed dominate.	Little structural diversity. Occasional shrubs. Areas appear to be periodically maintained. Granite riprap is stored on site.	Common. Large amount of introduced species (Bermuda, Johnson grass etc) have limited wildlife value.
Salix-Acacia	Moderate diversity- two species dominate overstory, acacia and black willow. Area part of old channel cut created during dam construction. Soil is sandy/loam overburden.	Overstory and herbaceous component. Parkland setting promotes diverse herbaceous component.	Common. Black willow is opportunistic species and frequently invades disturbed areas. Lack of wetland conditions diminishes potential uniqueness.
Thornscrub*	Moderate diversity with acacia dominating overstory. Disturbed soil conditions reflected by mosaic of upland and opportunistic species (arundo and black willow) throughout community.	Good structural diversity with overstory, understory and herbaceous components. Snags provide additional habitat. Fairly open canopy promotes thick herbaceous community. Age of community is less than 25 years based on historical aerial photograph.	Thornscrub is a desired community for much of the Lower Rio Grande Corridor initiative. The loss of thornscrub to agriculture and development has resulted in the listing of several species. The current community structure and plant density suggests that thornscrub community on USIBWC lands not potential habitat for the ocelot or jaguarundi.

Source: USIBWC 2003b

3.8 WILDLIFE

Common wildlife species in the region include the whitetail deer, turkey, javelina, bobwhite quail, scaled quail, white-winged dove, mourning dove, cottontail rabbit, jackrabbit, waterfowl, and many kinds of nongame birds. The region also provides important wintering habitat for thousands of migratory birds including many species of passerines, raptors, sandhill cranes, ducks, and geese. In addition to the more common wildlife species, a number of unique and rare animals occur in the region (Williams *et al*. 1977). Many of the terrestrial

wildlife species in the Project Area are limited in their distribution either partially or entirely to the Tamaulipan Biotic Province, and some are found only within the LRGV.

There are approximately 67 mammals of potential occurrence in the LRGV, including federal listed species, such as the jaguarundi (*Felis yagouaroundi*) and ocelot *(Felis pardalis*). The mammals are dominated by rodents (24 species) and bats (13 species). Some common mammals which may be encountered in the LRGV are the common raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), coyote *(Canis latrans*), Mexican ground squirrel (*Spermophilus mexicans*), and the bobcat (*Felis rufus*) (USIBWC 2003d), beaver (*Castor canadensis*) and nutria (*Myocastor coypus*), (Fermata 2003, USIBWC 2003b, USIBWC 2003d).

There are approximately 484 species of birds that potentially occur in the LRGV. The dominant numbers of avifauna are represented by the wood warblers (44 species), geese and ducks (30 species), sparrows and towhees (26 species), raptors (25 species), and tyrant flycatchers (25 species). Many species pass through the LRGV on their way to summer breeding or wintering grounds because of the convergence of the Central and Mississippi flyways and the point where many tropical birds reach their northernmost ranges (Fermata 2003).

Amphibians and reptiles are also well represented in the Project Area. There are approximately 76 species of reptiles and amphibians that potentially occur in Hidalgo County. The reptiles consist of snakes (29 species), lizards (19 species), turtles (six species), and one crocodile. The amphibians consist of frogs and toads (18 species), and three species of salamanders (TCWC 2003).

3.9 THREATENED, ENDANGERED, AND SENSITIVE SPECIES

Table 3.9-1 is a list of T&E species that the TPWD cites as potentially occurring in Hidalgo County. This list includes the USFWS-listed T&E species, state-listed species, and state species of concern. The table indicates whether the species would potentially occur at or near the project site as a resident, migrant, or not at all. In addition to those species, TPWD lists the Jaguarundi and the Vasey's Adelia *(Adelia vaseyi)* as occurring in the immediate area. Although Vasey's Adelia is a species of concern for Hidalgo County, it is not a federal or state listed species; therefore, it is not listed in Table 3.9-1. Descriptions of the species listed in the tables are included in Appendix C.

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Table 3.9-1 Federal and State Listed Species Potentially Occurring in the Surrounding Area

		Listing Status			Likelihood of Occurrence
Common Name	**Scientific Name**	**State**	**Federal**	**Required Habitat**	
Black Spotted Newt	*Notophthalmus meridionali*	T		can be found in wet or sometimes wet areas, such as arroyos, canals, ditches, or even shallow depressions; aestivates in the ground during dry periods; Gulf Coastal Plain south of the San Antonio River	**Potentially present**
Mexican Treefrog	*Smilisca baudinii*	T		subtropical region of extreme southern Texas; breeds May-October coinciding with rainfall, eggs laid in temporary rain pools	**Not likely present**
Sheep Frog	*Hypopachus variolosus*	T		predominantly grassland and savanna; moist sites in arid areas	**Not likely present**
South Texas Siren - large form	*Siren sp.* [1]	T		wet or sometimes wet areas, such as arroyos, canals, ditches, or even shallow depressions; aestivates in the ground during dry periods, but does require some moisture to remain; southern Texas south of Balcones Escarpment; breeds February-June	**Not likely present**
White-lipped Frog	*Leptodactylus labialis*	DL	E	grasslands, cultivated fields, roadside ditches, and a wide variety of other habitats; often hides under rocks or in burrows under clumps of grass; species requirements incompatible with widespread habitat alteration and pesticide use in south Texas	**Not likely present**
American Peregrine Falcon	*Falco peregrinus anatum*	DL	E	potential migrant; nests in west Texas	**Potentially present**
Arctic Peregrine Falcon	*Falco peregrinus tundrius*	DL	T	potential migrant	**Potentially present**
Cactus Ferruginous Pygmy-owl	*Glaucidium brasilianum cactorum*	T		riparian trees, brush, palm, and mesquite thickets; during day also roosts in small caves and recesses on slopes of low hills; breeding April to June	**Not likely present**
Common Black Hawk	*Buteogallus anthracinus*	T		cottonwood-lined rivers and streams; willow tree groves on the lower Rio Grande floodplain; formerly bred in south Texas	**Not likely present**
Gray Hawk	*Asturina nitidus*	T		mature woodlands of river valleys and nearby semiarid mesquite and scrub grasslands	**Not likely present**
Hook-billed Kite	*Chondrohierax uncinatus*	T		dense tropical and subtropical forests, but does occur in open woodlands; uncommon to rare in most of range; accidental in south Texas	**Not likely present**
Interior Least Tern	*Sterna antillarum athalassos*	E	LE	nests along sand and gravel bars within braided streams, rivers & some inland lakes	**Not likely present**

Table 3.9-1 Federal and State Listed Species Potentially Occurring in the Surrounding Area (…*continued*)

		Listing Status			Likelihood of Occurrence
Common Name	**Scientific Name**	**State**	**Federal**	**Required Habitat**	
Northern Beardless-tyrannulet	*Camptostoma imberbe*		T	mesquite woodlands; near Rio Grande frequents cottonwood, willow, elm, and great leadtree; breeding April to July	**Not likely present**
Reddish Egret	*Egretta rufescens*	T		resident of the Texas Gulf Coast; brackish marshes and shallow salt ponds and tidal flats; nests on ground or in trees or bushes, on dry coastal islands in brushy thickets of yucca and prickly pear.	**Not likely present**
Rose-throated Becard	*Pachyramphus aglaiae*	T		riparian trees, woodlands, open forest, scrub, and mangroves; breeding April to July	**Not likely present**
Sennett's Hooded Oriole	*Icterus cucullatus senneti*			often builds nests in and of Spanish moss (*Tillandsia unioides*); feeds on invertebrates, fruit, and nectar; breeding March to August	**Not likely present**
Tropical Parula	*Parula pitiayuma*	T		dense or open woods, undergrowth, brush, and trees along edges of rivers and resacas; breeding April to July	**Potentially present**
White-faced Ibis	*Plegadis chihi*	T		prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats	**Not likely present**
White-tailed Hawk	*Buteo albicaudatus*	T		near coast it is found on prairies, cordgrass flats, and scrub-live oak; further inland on prairies, mesquite and oak savannas, and mixed savanna-chaparral; breeding March to May	**Not likely present**
Wood Stork	*Mycteria americana*	T		forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, sometimes in association with other wading birds (*i.e.* active heronries); breeds in Mexico and birds move into Gulf States in search of mud flats and other wetlands, even those associated with forested areas; formerly nested in Texas, but no breeding records since 1960	**Not likely present**
Zone-tailed Hawk	*Buteo albonotatus*	T		rough, deep, rocky canyons and streamsides in semiarid mesa, hill, and mountain terrain; breeding March to July	**Not likely present**

Table 3.9-1 Federal and State Listed Species Potentially Occurring in the Surrounding Area (…*continued*)

		Listing Status			Likelihood of Occurrence
Common Name	**Scientific Name**	**State**	**Federal**	**Required Habitat**	
River Goby	*Awaous tajasica*	T		clear water with slow to moderate current, sandy or hard bottom, and little or no vegetation; also enters brackish and ocean waters	**Not likely present**
Bluntnose Shiner	*Notropis simus (extirpated)*	T		main river channels, often below obstructions over substrate of sand, gravel, and silt; damming and irrigation practices presumed major factors contributing to decline	**Not likely present**
Coues' Rice Rat	*Oryzomys couesi*	T		cattail-bulrush marsh with shallower zone of aquatic grasses near the shoreline; shade trees around the shoreline are important features; prefers salt and freshwater, as well as grassy areas near water; breeds April-August	**Not likely present**
Jaguar	*Panthera onca (extirpated)*	E	LE	()- dense chaparral; no reliable TX sightings since 1952	**Not likely present**
Jaguarundi	*Herpailurus yaguarondi*	E	LE	thick brushlands, near water favored; 6 month gestation, young born twice per year in March and August	**Potentially present**
Ocelot	*Leopardus pardalis*	E	LE	dense chaparral thickets; mesquite-thorn scrub and live oak mottes; avoids open areas; breeds and raises young June-November- Possible sightings by boarder patrol near the Project Area	**Potentially present**
Southern Yellow Bat	*Lasiurus ega*	T		associated with trees, such as palm trees (*Sabal mexicana*) in Brownsville, which provide them with daytime roosts; insectivorous; breeding in late winter	**Not likely present**
White-nosed Coati	*Nasua narica*	T		woodlands, riparian corridors and canyons; most individuals in Texas probably transients from Mexico; diurnal and crepuscular; very sociable; forages on ground & in trees; omnivorous; may be susceptible to hunting, trapping, & pet trade	**Not likely present**
Reticulate Collared Lizard	*Crotaphytus reticulatus*	T		requires open brush-grasslands; thorn-scrub vegetation, usually on well-drained rolling terrain of shallow gravel, caliche, or sandy soils; often on scattered flat rocks below escarpments or isolated rock outcrops among scattered clumps of prickly pear and mesquite	**Not likely present**

Table 3.9-1 Federal and State Listed Species Potentially Occurring in the Surrounding Area (…*continued*)

		Listing Status			Likelihood of Occurrence
Common Name	**Scientific Name**	**State**	**Federal**	**Required Habitat**	
Black striped snake	*Coniophanes imperialis*	T		extreme south Texas; semi-arid coastal plain, warm, moist micro-habitats and sandy soils; proficient burrower; eggs laid April-June	**Potentially present**
Indigo Snake	*Drymarchon corais*	T		thornbush-chaparral woodlands of south Texas, in particular dense riparian corridors; can do well in suburban and irrigated croplands if not molested or indirectly poisoned; requires moist microhabitats, such as rodent burrows, for shelter. Shed skin observed during field studies.	**Present**
Northern cat-eyed snake	*Leptodeira septentrionalis*	T		Gulf Coastal Plain south of the Nueces River; thorn brush woodland; dense thickets bordering ponds and streams; semi-arboreal; nocturnal	**Not likely present**
Speckled racer	*Drymobius margaritiferus*	T		extreme south Texas; dense thickets near water, Texas palm groves, riparian woodlands; often in areas with much vegetation litter on ground; breeds April-August	**Potentially present**
Texas Horned Lizard	*Phrynosoma cornutum*	T		open arid or semi-arid regions with sparse vegetation; grass, cactus, scattered brush or scrubby trees; burrows into soil, uses rodent burrows, or hides under surface cover	**Not likely present**
Texas Tortoise	*Gopherus berlandieri*	T		open scrub woods, arid brush, lomas, grass-cactus association; open brush with grass understory preferred; shallow depressions at base of bush or cactus or underground burrow or hides under surface cover	**Not likely present**
Walker's manioc	*Manihot walkerae*	E	LE	periphery of native brush in sandy loam; also on caliche cuestas; flowering April-September (following rains)	**Not likely present**
Texas Ayenia	*Ayenia limitaris*	E	LE	Woodlands on alluvial deposits on floodplains and terraces along the Rio Grande	**Potentially present**

E – Endangered
T – Threatened
NL – Not listed
TSA- Threatened by similarity of appearance
P/T – Federally proposed for threatened status
w/CH – with critical habitat

3.10 AQUATIC RESOURCES

3.10.1 Fish

In general, most aquatic and terrestrial creatures in the LRGV favor fringe-type habitat where one habitat type transitions into another (USIBWC 2003d). The sediment island downstream from Retamal Dam has developed into such a habitat. The backwaters and mud flats that pass between the island and the riverbank, flow very slowly creating an area utilized by benthic macroinvertebrates including insects (larval forms), worms, mussels, and crustaceans (shrimp, crawfish, *etc*.), smaller forage fish and the frye of larger fish as they mature.

There are approximately 178 species of fish that could potentially occur near the Project Area (USIBWC 2003d). In a 1990 study by Texas A&M at Galveston, 45 fish species were found to inhabit the LRGR from RM 51 near Brownsville to RM 195 upstream of Anzalduas Dam. The dominant fish species in the 134 mile stretch of river were inland silverside (*Menidia beryllina*), mosquitofish (*Gambusia affinis*), red shiner (*Notropis lutrensis*), channel catfish *(Ictalurus punctatus)* and threadfin shad *(Dorosoma petenense),* which together produced 81 percent of all fish captured during the 1990 study. Large forage fish include carp (*Cyprinus carpio*), buffalo (*Ictiobus* spp.), striped mullet (*Mugil cephalus*), catfish, and sunfish (Fermata 2003, USIBWC 2003d).

The variable nature of the flow in the Rio Grande causes fluctuations in the number and concentrations of fish, forcing them to constantly move up and down river to feed and spawn according to the water levels available.

The Draft 2002 Texas Water Quality Inventory data also note a fish kill of approximately 150 fish, near the Santa Ana Wildlife Refuge due to low dissolved oxygen levels on August 31, 1999 (TCEQ 2002a). The Santa Ana Wildlife Refuge area is located a few miles upstream from the Retamal Diversion Dam.

3.11 AIR QUALITY

3.11.1 Air Quality Regulations

The Clean Air Act (CAA) of 1970, as amended by the CAA amendments of 1990, directed the USEPA to develop, implement, and enforce strong environmental regulations that would ensure cleaner air for all Americans. In order to protect public health and welfare, the USEPA developed concentration-based standards called National Ambient Air Quality Standards (NAAQS). The promulgation of the CAA was driven by the failure of nearly 100 cities to meet the NAAQS for ozone and carbon monoxide and by the inherent limitations in previous regulations to effectively deal with these and other air quality problems. The USEPA established both primary and secondary NAAQS under the provisions of the CAA. Primary standards define levels of air quality necessary to protect public health with an adequate margin of safety. Secondary standards define levels of air quality necessary to protect public welfare (*i.e*., soils, vegetation, property, and wildlife) from any known or anticipated adverse effects.

NAAQS are currently established for six air pollutants (known as "criteria air pollutants") including carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), sulfur oxides (SO_X, measured as sulfur dioxide, SO_2), lead (Pb), and particulate matter. Particulate matter standards incorporate two particulate classes: 1) particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (PM_{10}), and 2) particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers ($PM_{2.5}$). Only PM_{10} is regulated by the rule.

The CAA does not make the NAAQS directly enforceable. However, the Act does require each state to promulgate a state implementation plan (SIP) that provides for implementation, maintenance, and enforcement of the NAAQS in each AQCR in the state. The CAA also allows states to adopt air quality standards that are more stringent than the federal standards. As promulgated in the Texas Administrative Code, Title 30, Subchapter A, the State of Texas has adopted NAAQS as the Texas standards listed in Table 3.11-1.

Table 3.11-1 National and State Ambient Air Quality Standards

Criteria Pollutant	Averaging Time	Primary NAAQS[a,b,c]	Secondary NAAQS[a,b,d]
Carbon Monoxide	8-hour 1-hour	9.5 ppm (10 mg/m^3) 35.5 ppm (40 mg/m^3)	9.5 ppm (10 mg/m^3) 35.5 ppm (40 mg/m^3)
Lead	Quarterly	1.55 μg/m^3	1.55 μg/m^3
Nitrogen Dioxide	Annual	0.0543 ppm (100 μ/m^3)	0.0543 ppm (100 μg/m^3)
Ozone	1 hour	0.125 ppm (235 μg/m^3)	0.125 ppm (235 μg/m^3)
PM_{10}	Annual 24-hour	51 μg/m^3 155 μg/m^3	51 μg/m^3 155 μg/m^3
$PM_{2.5}$	Annual 24-hour	15 μg/m3 66 μg/m3	15 μg/m3 66 μg/m3
Sulfur Oxides (measured as SO_2)	Annual 24-hour 3-hour	0.035 ppm (80 μg/m^3) 0.145 ppm (365 μg/m^3) No standard	No standard No standard 0.55 ppm (1,300 μg/m^3)

Source: USEPA 2003.
PM_{10} Particles with aerodynamic diameters less than or equal to a nominal 10 micrometers
$PM_{2.5}$ Particles with aerodynamic diameters less than or equal to a nominal 2.5 micrometers

[a] National standards (other than O_3, particulate matter, and those based on annual averages or annual arithmetic mean) are not be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8- hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when 99 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

[b] The NAAQS are based on standard temperature and pressure of 25 Celsius and 760 millimeters of mercury.

[c] National Primary Standards: The levels of air quality necessary to protect the public health with an adequate margin of safety. Each state must attain the primary standards no later than 3 years after the state implementation plan is approved by the USEPA.

[d] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. Each state must attain the secondary standards within a "reasonable time" after the state implementation plan is approved by the USEPA.

3.11.2 Regional Air Quality

The USEPA classifies the air quality within an AQCR according to whether or not the concentration of criteria air pollutants in the atmosphere exceed primary or secondary NAAQS. All areas within each AQCR are assigned a designation of attainment, nonattainment, unclassifiable attainment, or not designated attainment for each criteria air pollutant. An attainment designation indicates that the air quality within an area is as good or better than the NAAQS. Nonattainment indicates that air quality within a specific geographical area exceeds applicable NAAQS. Unclassifiable and not designated indicates that the air quality cannot be or has not been classified based on available information as meeting or not meeting the NAAQS and is therefore treated as attainment. Before a nonattainment area is eligible for reclassification to attainment status, the state must demonstrate compliance with NAAQS in the nonattainment area for three consecutive years and demonstrate, through extensive dispersion modeling, that attainment status can be maintained in the future even with community growth.

The Project Area is located within the Brownsville-Laredo Air Quality Control Region (AQCR) 213. This AQCR is located completely within the State of Texas, covering Cameron County, Hidalgo County, Jim Hogg County, Starr County, Webb County, Willacy County, and Zapata County. As of August 2001, the USEPA designated air quality within all counties of AQCR 213 under attainment status for all criteria pollutants (USEPA 2001).

TCEQ has identified 11 companies in Hidalgo County as contributors of point source emissions. Potential stationary sources of criteria pollutant and hazardous air pollutant emissions within Hidalgo county include several oil mills and refineries, manufacturing and electronics companies, and utilities and gasoline facilities (TNRCC 2003). The permitted stationary point source emission inventory for Hidalgo County for calendar year 2000 (latest available data as of June 2002) is presented in Table 3.11-2.

Table 3.11-2 Stationary Point Source Emissions Inventory for Hidalgo County

Air Pollutant Emission Source	CO (tpy)	VOC (tpy)	NO_X (tpy)	SO_X (tpy)	PM_{10} (tpy)
Hidalgo County Emissions Inventory[a]	3,674	601	2,615	59	374

Tpy: tons per year
[a] TNRCC 2003

3.12 NOISE

Federal and local governments have established noise guidelines and regulations for the purpose of protecting citizens from potential hearing damage and from various other adverse physiological, psychological, and social effects associated with noise. The Federal Interagency Committee on Urban Noise developed land-use compatibility guidelines for noise in terms of day-night average sound level (DNL) (USDT 1980). It is

recommended that no residential uses, such as homes, multifamily dwellings, dormitories, hotels, and mobile home parks, be located where the noise is expected to exceed a DNL of 65 dBA. The DNL is the energy average A-weighted acoustical level for a 24-hour period with a 10-decibel upward adjustment added to the nighttime levels. Some commercial and industrial uses are considered acceptable where the noise level exceeds NDL of 65 dBA. For outdoor activities, the USEPA recommends DLN of 55 dBA as the sound level below which there is no reason to suspect that the general population will be at risk from any of the effects of noise (USEPA 1974).

Land-use and zoning classifications in the area surrounding the Project Area provide an indication of potential noise impact. Land use surrounding Retamal Dam is predominantly agricultural. Due to the flood-prone nature of land within this area, no sensitive noise receptors are located in or surrounding the Project Area. These would include schools, churches, and medical facilities. The major noise sources in the Project Area are associated with agricultural activities.

Typical outdoor noise sources in the Project Area include vehicles, pickup trucks, diesel tractor mowers, and other farm machinery. Noise sources such as mowers at 100 feet, or a diesel truck at 50 feet are approximately 70 dBA and 88 dBA, respectively. Equipment used for vegetation maintenance along the levees would be approximately 82.5 dBA at 50 feet (CERL 1978).

3.13 CULTURAL RESOURCES

Historic and archeological resources were discussed in detail in the draft EIS for Alternative Vegetation Management Practices for the LRGFCP for Cameron, Hidalgo, and Willacy Counties, Texas (USIBWC 2003d). The EIS presented findings of cultural resources surveys, which were conducted in accordance with the National Historic Preservation Act (NHPA) of 1966 and the Archeological Resource Protection Act to identify historic and archeological resources, which may be affected by alternative vegetation maintenance practices. If archaeological resources are discovered that may be disturbed during site activities, then the Act requires permits for excavating and removing the resource.

Although numerous sites were documented as having cultural significance in Hidalgo County, none were identified within the Project Area. Additionally, no significant archaeological and historical resources were identified within a 1-mile radius during the environmental database search of historic sites (EDR 2003; USIBWC 2003d).

3.14 HAZARDOUS AND TOXIC WASTE

Hazardous materials are those substances defined by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA) and the Toxic Substances and Control Act (TSCA). Hazardous wastes are defined under the Solid Waste Disposal Act (SWDA), as amended by the Resource Conservation and Recovery Act (RCRA). In

general, both hazardous substances and wastes include substances that, because of their quantity, concentration, and physical, chemical, or infectious characteristics, may present danger to public health and/or welfare and to the environment when released or improperly managed.

Waste disposal activities at or near the Project Area were reviewed to identify areas where industrial processes occurred, solid and hazardous wastes were stored, disposed, or released; and hazardous materials or petroleum or its derivatives were stored or used. A database search of hazardous, toxic, and radioactive waste sites was conducted within a 1-mile radius of the Project Area identified no adjacent sites classified as or listed on any of the following:

- The National Priority List (NPL)
- RCRA Corrective Actions and associated Transport, Storage, and Disposal list
- State equivalent priority list
- State equivalent Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) list
- Currently or formerly under review by the USEPA
- RCRA permitted treatment, storage, and disposal facilities
- Leaking underground storage tanks
- Permitted as solid waste landfills, incinerators, or transfer stations
- Registered USTs
- Registered aboveground storage tanks
- Emergency Response Notification System of Spills (ERNSS) list
- RCRA registered large generator of hazardous waste
- RCRA registered small generator of hazardous waste
- State spills list.

A review of available historical aerial photographs was also conducted to assist in identifying past land uses and potential environmental contamination sources, and to verify other information found in the records search. Results of the review did not reveal any potential sites within the Project Area or surrounding areas. Historical aerial photographs and topographic maps are included in the Results of Field Studies and Information Research Report (USIBWC 2003b).

3.15 SOCIOECONOMICS

The Retamal Diversion Dam is located in a sparsely populated portion of southeastern Hidalgo County. The county's southern border consists of 1,596 square

miles of Rio Grande delta (Hidalgo County 2003). Within a 2-mile radius of the Project Area are two units of the Las Palomas Wildlife Management Area (WMA); one is located to the northeast, the other to the west and southwest. Development is located approximately 9 miles north and east from the Project Area. The nearest populated areas to the Project Area are the cities of Weslaco and Donna to the north, Progreso and Progreso Lakes to the east, and Parajitos, a colonia southeast of Progreso.

3.15.1 Population

Hidalgo County's total population in 2000 was approximately 569,463, a 33 percent increase from 383,545 in 1990 (USCB 2000). The largest populated cities within the county are McAllen with a population of 106,414; Mission, population 45,000; and Pharr, population 46,660. Table 3.15-1 shows the percent change from 1990 to 2000 in population for McAllen, Mission, and Pharr as well towns and communities within approximately 10 miles from the project site.

Table 3.15-1 Historical Population Data

	1990	2000	Percent Change 1990 - 2000
State of Texas	16,986,510	20,851,820	19%
Hidalgo County	383,545	569,463	33%
McAllen	84,021	106,414	21%
Mission	28,653	45,408	37%
Pharr	32,921	46,660	29%
Weslaco	21, 877	26,935	19%
Donna	12,751	14,768	14%
Progreso	2,037	4,851	58%
Progresso Lakes	121	259	53%

USCB 2000

Hidalgo County has several communities referred to as Census Designated Places (CDP). The Texas Office of the Attorney General and the U.S. Census Bureau has designated colonias as CDPs in five Texas counties (USCB 2000). These communities are named, unincorporated communities with a mixture of residential, commercial, and retail areas. Parajitos, CDP is the nearest colonia to the Project Area (see Subsection 3.15.6).

South Texas is considered the fastest growing region in Texas with the Lower Rio Grande region showing a projected increase of 181 percent from 2000 to 2040 (Texas A&M University 2003). It is estimated that the McAllen-Edinburg-Mission metropolitan area will have a population of more than 1 million by 2030 (Texas A&M University 2003). Hidalgo County's population is estimated to be approximately 1,843,141 by the year 2040 (Texas Comptroller's Office 2003).

Racial composition of Hidalgo County and the nearest communities to the Project Area are shown in Table 3.15-2. The largest racial category for the county and communities near the Project Area is "Hispanic or Latino," with the exception of Progreso Lakes. The largest racial category in Progreso Lakes is "White" as indicated in Table 3.15-2.

Table 3.15-2 Racial Composition of Hidalgo County and Communities Located Along the Rio Grande

Race	Hidalgo County		Weslaco		Donna		Progreso		Progreso Lakes	
	No.	%	No.	%	No.	%	No.	%	No.	%
Hispanic or Latino (any race)	503,100	88.3	22,560	83.8	12,886	87.3	4,803	99.0	93	39.7
ONE RACE										
White	59,423	10.4	3,961	14.7	1,801	12.2	45	0.9	140	59.8
Black or African American	1,934	0.3	32	0.1	24	0.2	0	0.0	0	0.0
American Indian and Alaska Native	428	0.1	26	0.1	9	0.1	0	0.0	0	0.0
Asian		0.6	298	1.1	25	0.2	2	0.0	1	0.4
Native Hawaiian/Other Pacific Islander	37	0.0	1	0.0	0	0.0	0	0.0	0	0.0
Some other race	171	0.2	15	0.1	3	0.0	1	0.0	0	0.0
Two or more races	1,163	0.2	42	0.2	20	0.1	0	0.0	0	0.0
Total Population	569,463		26,935		14,768		4,851		234	

Source: USCB 2000

The median age for Hidalgo County and communities near the Project Area is presented in Table 3.15-3. Median age for the communities of Weslaco and Donna is similar to the county as a whole with Progreso showing the lowest median age of 21.6 and Progreso Lakes with the highest median age of 43.2. Gender percentages within the county and the communities of Weslaco and Donna are similar except for Progreso and Progreso Lakes where the percentages for males are slightly higher.

Table 3.15-3 Population Distribution by Age and Gender

	Median Age	Gender	
		Male (%)	Female (%)
Hidalgo County	27.3	48.4	51.6
Weslaco	30.8	46.3	53.7
Donna	28.9	48.4	51.6
Progreso	21.6	51.2	48.8
Progreso Lakes	43.2	51.7	48.3

Source: USCB 2000

3.15.2 Employment

Hidalgo County's total full-time and part-time employment in 2001 was 217,418 (Bureau of Economic Analysis 2003). The largest employment sectors in terms of jobs were government (federal, state, and local) and retail trade at 43,807 and 30,217 jobs, respectively. Top employers in the county include H.E. Butt Grocery Company, Wal-Mart Associates, Inc., Williamson-Dickie Manufacturing Company, McAllen ISD and Rio Grande Regional Hospital (Texas A&M University 2003). The unemployment rate in 2001 was 13.7 percent as compared to the statewide unemployment rate of 5.6 percent (Texas A&M University 2003).

Farm employment makes up approximately 2 percent of the county's total employment (Bureau of Economic Analysis 2003). In 1997 there were approximately 1,373 farms totaling 635,884 acres in the county. The surrounding area near the Project Area is primarily agricultural. Employment in the City of Weslaco, the nearest populated community to the Retamal Diversion Dam, is centered on the agricultural industry. There are several cotton gins and produce packing plants operating in downtown Weslaco (Weslaco Chamber of Commerce 2003).

3.15.3 Income

Income and poverty figures obtained from the 2000 U.S. Census Bureau for Hidalgo County and communities from which construction workers for the proposed project will originate are provided in Table 3.15-4. As indicated in the table, per capita income for Weslaco and Donna are similar to Hidalgo County's per capita income of $9,899. Progresso's per capita income of $4,789 is approximately half of per capita income recorded for the county. Progreso Lakes per capita income of $24,029 is nearly double that of Hidalgo County.

Table 3.15-4 2000 Income and Poverty

Income and Poverty Characteristics	Hidalgo County		Weslaco		Donna		Progresso		Progreso Lakes	
Total Population	569,463		26,935		14,768		4,851		259	
Total Number of Families	133,186		6,529		3,582		979		70	
Median Family Income	26,009		29,215		23,892		18,313		72,500	
Families below the poverty line	41,725	31.3%	1,733	26.5%	1,168	32.6%	503	51.3%	3	4.3%
Individuals below the poverty line	201,865	35.9%	8,164	30.9%	5,494	37.8%	2,513	50.9%	11	4.2%
Total Number of Households	156,709		8,213		4,194		1,053		75	
Median Household Income	24,863		26,573		22,800		18,184		68,125	
Per Capita Income (dollars)	9,899		11,235		8,569		4,789		24,029	

Source: USCB 2000

Hidalgo County records 31.3 percent of the families are below the poverty line. The communities of Donna and Weslaco have similar percentages to that of the county at 32.6 percent and 26.5 percent, respectively. Progreso's percentage is much higher than

the county's percentage at 51.3 percent and Progreso Lakes' percentage is significantly lower at 4.2 percent.

3.15.4 Housing

According to the 2000 U.S. Census, Hidalgo County has 192,658 total housing units; of which, 81 percent are occupied and 19 percent are vacant. In the communities closest to the Project Area, the availability of housing is low with only 7 percent of the housing units vacant in Progreso and 9 percent in Progreso Lakes. However, the larger communities to the north show greater housing availability with a 20 percent vacancy in Weslaco and 28 percent vacancy in Donna. Total housing units, occupied housing, and vacant housing units are shown in Table 3.15-5.

Table 3.15-5 Housing Units

	Hidalgo County		Weslaco		Donna		Progreso		Progreso Lakes	
Total Housing Units	192,658		10,207		5,763		1,122		93	
Occupied Housing Units	156,824	81%	8,197	80%	4,154	72%	1,039	93%	85	91%
Vacant Housing Units	35,834	19%	2,010	20%	1,609	28%	83	7%	8	9%

U.S. Census Bureau 2000

3.15.5 Community Infrastructure

The immediate area surrounding the Project Area is rural. Progreso Independent School District, Donna Independent School District, and Weslaco Independent School serve the communities near the Project Area. Progreso Independent School District is a small school district in the community of Progreso, approximately 2 miles from the Retamal Diversion Damn. Total enrollment for the 2001-2002 school year was 2,052 students (Progreso Independent School District 2003). The district has a total of five campuses: one high school, one alternative school, one middle school, one elementary school, and one early childhood center. The University of Texas at Brownsville and the Texas Southmost College, both located in Brownsville approximately 35 miles from Progreso, are the nearest public 4-year colleges.

Progreso is located at the intersection of U.S. Highway 281 and Farm Road 1015. The nearest major interstate is Interstate 37 approximately 158 miles northeast of Progreso. Progreso Airport is located approximately 1 mile east of Progreso. It is privately owned by U.S. Customs and provides general aviation services (Airnav.com 2003). The longest runway is paved and extends 4,470 feet. The International Bridge provides access for businesses and tourists to Mexico and is approximately 2 miles south of Progreso. In the year 2000, approximately 1.3 million vehicles and 1.2 million pedestrians crossed the bridge into Progreso, Mexico (Weslaco Chamber of Commerce 2003).

The nearest medical facilities are located in Weslaco. Knapp Medical Center is the nearest hospital with a total of 233 beds. There are approximately 12 clinics serving the area, including the Weslaco Heart Center (Weslaco Chamber of Commerce 2003). Magic Valley Electric Co-Op provides electricity to Progreso and water is supplied from the Rio Grande through Hidalgo & Cameron District #9.

3.15.6 Colonias

Hidalgo County has numerous colonias near the United States-Mexico border. Colonias are …"unincorporated border communities that often lack adequate water and sewer systems, paved roads, and safe, sanitary housing." Housing in the colonias are typically makeshift structures of wood, cardboard, or other materials; residents improve their homes when finances allow (Texas Department of Housing and Community Affairs [TDHCA] 2003). The population of these settlements is typically individuals of low and very low income and predominantly Hispanic. Residents in colonias are primarily unskilled, seasonal workers with very low incomes. Agriculture service providers and construction-related jobs account for 50 percent of the colonias workforce (TDHCA 2003). In Hidalgo County, the average annual income is $8,899.

The nearest colonia to the Project Area, Parajitos, is located approximately 5 to 6 miles northeast near the community of Progreso. East and north of Parajitos, within Progresso, there are approximately 15 colonias scattered throughout the community. A cluster of several colonias is located southeast and south of Weslaco.

3.16 ENVIRONMENTAL JUSTICE

Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, was issued by the president on February 11, 1994. The EO requires federal agency to make "achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." As such, the Proposed Action must be evaluated in terms of an adverse effect that:

a) is predominantly borne by a minority population and/or low-income population; or

b) will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non-low income population.

Data from Tables 3.15-2 and 3.15-4 indicate that Hidalgo County has disproportionately high minority (approximately 89 percent) and low-income populations (individuals – 35.9 percent) in relation to the State of Texas.

SECTION 4
ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION AND ALTERNATIVES

To assess the direct, indirect, and cumulative impacts of the USIBWC Proposed Action, the Project Area was defined as the "area of influence" potentially impacted by the Proposed Action. The Project Area includes the U.S. portion of a sandbar and vegetated island that extends 1,407 feet from the downstream side of the Retamal Dam and east to the international boundary, as described in subchapter 3.1. Sometimes the area of influence includes surrounding or adjacent areas such as the USIBWC managed lands west of the sandbar and vegetated island on the river terrace and the contractor equipment lay-down area. The area of influence for other resource areas such as air quality, hazardous waste, cultural resources, socioeconomics, and environmental justice are discussed on a regional basis.

4.1 WATER RIGHTS

4.1.1 Proposed Action – Option 1

Water from the Rio Grande would be required to mix with the dredge material as a requirement to create slurry to transport the sediment to the dewatering cells located in Mexico. River flow could not be reduced during hydraulic dredging operations. The amount of water released upstream must be the same as the required flow rate needed for hydraulic dredging. Approximately 1,200 acre-feet of water rights would be needed for dredging operations to occur; however, additional amounts will likely be necessary to allow for contingencies such as lower than normal production rates, down times, inclement weather, *etc*.

Hydraulic dredging operations could not occur without water acquisition. Currently, there are no U.S. water rights available. Water would have to be temporarily supplied by Mexico or purchased from water right holders.

4.1.2 Proposed Action – Option 2

Water rights would not be required; therefore, impacts would not be expected.

4.1.3 No Action Alternative

There would be no impact on water rights.

4.2 RIVER HYDROLOGY

4.2.1 Proposed Action – Option 1

Water Regimes

The estimated maximum amount of slurry mix that would be used during hydraulic dredging operations is approximately 300 cy/hr. Therefore, assuming a 10-hr working day, that is equivalent to 3,000 cy/day of slurry mix. This represents a very small amount of water that would be removed from the river. Although the decant water from the dewatering cells on the Mexican side would not be allowed to enter the river directly, it is likely the decant water would eventually make its way back into the river through groundwater flow.

The average stream flow at the project site is approximately 635 cfs, which is equivalent to 2,035,200 cy/day. Assuming the maximum amount of slurry mix required per day is 3,000 cy, the increase in water usage required for hydraulic dredging operations is approximately 0.15 percent.

Long term impacts on river hydrology would be negligible as the Proposed Action would re-establish design channel configuration created during the original dam construction. Dredging activities would result in re-establishment of the international boundary; however, long-term maintenance would likely be required to preserve the boundary.

Sedimentation

The slurry mix would be pumped by diesel or electric-powered centrifugal pumps with discharge pipes ranging from 6 to 48 inches in diameter and transported by pipeline to the designated disposal area on the Mexican side of the river.

Sediment may be lost downstream during dredging operations creating higher levels of TSS. Hydraulic dredging operations generally result in less turbidity. Elevated levels of suspended solids concentrations are generally confined to the immediate vicinity of the dredge and dissipate rapidly at the completion of the operation (USACE 1983). Depending on dredging equipment used, dredging operations would be performed with downstream areas enclosed with silt curtain, Gunderbooms®, or other appropriate means to prevent degradation of turbidity outside the dredging area. The placement of silt curtains or Gunderbooms would be necessary to prevent fine sediments from being lost downstream during the dredging operations.

Long-term maintenance would likely be required to address re-occurring island formation and related sediment accretion at dam apron to assure channel configuration is maintained in the future.

Flood Control

Hydraulic modeling results indicate that an approximate 0.05 foot increase in flood containment capacity would be achieved by dredging. Therefore, removal of the sandbar and island would not appreciably improve flood containment capacity.

4.2.2 Proposed Action – Option 2

Water Regimes

Mechanical dredges do not require water to remove bottom sediment. Dredging is performed through the direct application of mechanical force to dislodge and excavate the material at almost *in situ* densities. Backhoes, buckets (such as clamshell, orange-peel, and dragline), bucket ladder, bucket wheel, and dipper dredges are types of mechanical dredges that may be used under this option.

River flow would be maintained at all times during dredging activities. Areas of the island as well as cross sections of the river would have to be segregated or sectioned off from the flow of water so as not to cause loss of dredge material during operations. Therefore, river flow is not expected to be impacted by mechanical dredging activities.

Long term impacts on river hydrology would be negligible as the Proposed Action would re-establish design channel configuration created during the original dam construction. Dredging activities would result in re-establishment of the international boundary; however, long-term maintenance would likely be required to preserve the boundary.

Sedimentation

Sediment may be lost downstream during dredging operations creating higher levels of TSS. Sediment best management practices (BMP) would be necessary to prevent fine sediments from being lost downstream during the dredging operations. An impervious silt curtain downstream or around the dredging operation could be used. The flexible polyester-reinforced vinyl fabric forming the barrier is maintained in a vertical position by floatation material at the top and a ballast chain along the bottom. The curtain pieces are manufactured in 100-foot sections which are joined at the site. Suspended solids of less than 300 parts per million would have to be maintained downstream of the dredging operations according to TCEQ requirements. Any negative impacts due to fugitive sediments will be localized and occur only during times of actual dredging operations.

Since a mechanical dredge would not be capable of transporting dredged material to the final destination, other means of transport would be required. Truck access from the dredge site on the U.S. side of the river to Mexico is not available. Potentially, a conveyor system could be used to transport dredged material to the top of the dike on the Mexican side, where truck access would be possible.

Long-term maintenance would likely be required to address re-occurring island formation and related sediment accretion at dam apron to assure channel configuration is maintained in the future.

Flood Control

Impacts associated with implementation of Option 2 would be similar to those described under Option 1.

4.2.3 No Action Alternative

Water Regimes

No impacts would occur from the baseline activities. The main channel in the river could potentially continue to shift toward the Mexican side of the international boundary.

Sedimentation

The accumulation of sediment would likely continue in the channel on the U.S. side of the Rio Grande and along the concrete apron beneath the flood gates, thus potentially impairing the ability of the gates to operate effectively to properly control flood events. Further changes to the international boundary would likely occur as the river continues to cut into the Mexican side of the river bank. The main channel in the river could potentially continue to migrate, thus shifting the international boundary.

Long-term maintenance would likely be required to address sediment accretion at the dam apron and to assure channel configuration is maintained in the future.

Flood Control

Currently, there is no appreciable impact to flood containment capacity.

Long-term maintenance would likely be required to assure channel configuration is maintained in the future. Bank stabilization (armoring with rip-rap) on the Mexican side would likely re-establish the former bank extent and the international boundary.

4.3 WATER AND DREDGE MATERIAL QUALITY

4.3.1 Proposed Action – Option 1

Sediment and elutriate sampling results of the dredge material indicate parameters analyzed for are below TCEQ criteria for those parameters. If the sediment spoils were to be used in the United States, there would be no restrictions as the use of the spoils material. Likewise the elutriate (decant water) analysis showed no parameters exceeding TCEQ criteria levels.

TSS is the only water quality parameter of concern. TSS in the discharge from the BU site would be controlled through BMPs. See subchapter 4.2.1 for further details.

Elutriate created in Mexico from the dewatering process of the spoils would be directed away from and not allowed into the river.

The spoils created from Option 1 would be put to a BU in Mexico reinforcing flood control levees.

4.3.2 Proposed Action – Option 2

Impacts associated with implementation of Option 2 would be similar to those described under Option 1. Mechanical dredging operations would likely cause an increase in TSS over the hydraulic dredging method. TSS in the discharge from the BU site would be controlled through BMPs. See Subsection 4.2.2 for further details.

4.3.3 No Action Alternative

Under the No Action Alternative, there would be no change from the baseline activities.

4.4 SOILS AND GEOLOGY

4.4.1 Proposed Action – Option 1

Construction activity under Option 1 would occur within an area in which the soils have been disturbed and modified by prior construction. Approximately 54,000 cy of sediment would be removed and disposed of in dewatering cells located on vacant Mexican Federal Government land adjacent to the river at the dredging location. The equipment lay-down area would revert to the pre-construction state. The contractor would ensure completion and approval of a storm water pollution prevention plan before initiating activities. The plan likely would include erosion control techniques that would be used during construction and dredging activities to minimize erosion.

Earthwork would be planned and conducted in such a manner to minimize the duration of exposure of unprotected soils. If embankments near the island are disturbed to allow access of heavy equipment to the dredging area, then the side slopes and back slopes would be protected immediately upon completion of rough grading. Protection would be provided by accelerated growth of permanent vegetation, temporary vegetation, mulching, or netting. Slopes too steep for stabilization by other means would be stabilized by hydroseeding, mulch anchored in place, covering by anchored netting, sodding, or such combination of these and other methods as may be necessary for effective erosion control. Use of BMPs such as rock berms, silt fences, and single point construction entries would minimize erosion during dredging and vegetation clearing activities. Grass and other landscaping would be reestablished in the disturbed areas immediately after completion of construction, thereby reducing the potential for erosion. For these reasons, no significant soil impacts would be expected.

Short-term minor surface disturbances would occur at equipment lay down areas. These areas have previously been disturbed and may require minor modification to the topography to allow for equipment egress. Any topsoil removed from the site would be replaced upon completion of the project.

The Project Area is not located in areas of known earthquake faults. Because dredging and other construction activities are not located along any known faults, the potential for surface fault rupture occurring at the Project Area is considered to be low.

4.4.2 Proposed Action – Option 2

Impacts associated with implementation of Option 2 would be similar to those described under Option 1.

4.4.3 No Action Alternative

The No Action Alternative would include the continuation of current maintenance practices under the baseline condition, which would not affect the existing soils and geology in the Project Area. There would be no significant erosion or compaction of soils due to the current maintenance practices.

4.5 WETLANDS

4.5.1 Proposed Action – Option 1

The Proposed Action will eliminate 2.1 acres of riverine wetlands. The wetlands are characterized by early successional species and dominated by non-native arundo. Although the wetlands are dominated by non-native species, the relatively limited amount of riverine wetlands in the LRGV accentuates their wetland value. Approximately 4,178 acres of wetlands are found in the LRGV, of which 52 acres are considered riverine wetlands. The elimination of 2.1 acres of riverine wetlands represents a net decrease of 4 percent of riverine wetlands for the LRGV. The loss of riverine wetlands would be mitigated as a result of conducting the Proposed Action.

Heavy sediment loads and variable water regimes of the Rio Grande would continue to provide a source and means for sediment build-up.

4.5.2 Proposed Action – Option 2

Impacts associated with implementation of Option 2 would be similar to those described under Option 1.

4.5.3 No Action Alternative

Long-term changes could include an increase in wetlands as sediment continues to accrete and vegetation becomes established. Decrease in wetlands are also possible in the advent of a storm event which could displace the island. Some erosion of the upstream point of the island and sandbar has occurred based on comparison of 1996 ortho imagery and 2003 ground survey.

Heavy sediment loads and variable water regimes of the Rio Grande would continue to provide a source and means for sediment build-up.

4.6 VEGETATION

4.6.1 Proposed Action – Option 1

A total of 2.3 acres of vegetation would be removed by hand prior to dredging activities. Loss would include 2.1 acres of Arundo-Salix community and 0.2 acre of a Salix-Celtis community. Overall, the vegetation on the island is common for the region and the impacts by its loss to the regional vegetative community would be minimal. Table 4.6-1 describes the vegetation communities that would be impacted by this option.

Table 4.6-1 Vegetation Communities Impacted

Vegetation Communities	Comments
Vegetated Island	
Arundo Flats	The community would be removed as a result of Proposed Action
Arundo-Salix	The community would be removed as a result of Proposed Action
Salix-Celtis	The community would be removed as a result of Proposed Action
Riparian Margin/Terrace	
Salix-Fraxinus	Waterward margin adjacent to the Project Area would be avoided. Portion owned by USFWS Refuge adjacent to Project Area would also be avoided.
Arundo	USFWS Refuge property adjacent to Project Area that would be avoided.
Oldfield	Adjacent to Project Area, possible equipment lay-down location.
Salix-Acacia	Adjacent to Project Area, possible equipment lay-down location.

4.6.2 Proposed Action – Option 2

Impacts associated with implementation of Option 2 would be similar to those described under Option 1.

4.6.3 No Action Alternative

There will be no measurable change from the baseline conditions. Long-term changes could include an increase in early successional communities. Decrease in vegetation is also possible in the advent of a storm event which could displace the island. Some erosion and loss of vegetation on the upstream point of the island has occurred based on comparison of 1996 ortho imagery and 2003 ground survey.

4.7 WILDLIFE

4.7.1 Proposed Action – Option 1

The removal of the sediment island would have a localized negative impact to some species of wildlife. Wildlife use of the island by several species was observed during field investigations (USIBWC 2003b). Dredging operations would have a direct localized impact on benthic invertebrates, although it is not likely to have a measurable

effect on the rivers benthic community. Impacts to wildlife, particularly migratory birds would be minimized by conducting dredging operations outside of the nesting season and major migratory periods. Although the Project Area habitat is not considered unique and is dominated by intrusive non-native species, the limited extent of riverine wetland communities within the LRGV accentuate the Project Areas values as wildlife habitat.

4.7.2 Proposed Action – Option 2

Impacts associated with implementation of Option 2 would be similar to those described under Option 1.

4.7.3 No Action Alternative

Under the No Action Alternative, there would be no change from the baseline condition.

4.8 THREATENED, ENDANGERED, AND SENSITIVE SPECIES

4.8.1 Proposed Action – Option 1

The Proposed Action is not likely to impact threatened and endangered species near the Project Area. Although there is a possibility of T&E species within the Project Area, the Proposed Action is not likely to affect listed species. The USFWS concurs with this analysis through a letter dated June 17, 2003 assuming BMPs are followed during dredging operations (see Appendix A).

4.8.2 Proposed Action – Option 2

Impacts associated with implementation of Option 2 would be similar to those described under Option 1.

4.8.3 No Action Alternative

Under the No Action Alternative, there would be no change from the baseline condition.

4.9 AQUATIC RESOURCES

4.9.1 Proposed Action – Option 1

There are no commercial fisheries in the river near the Project Area. Some recreational fishing was observed near the Project Area using cast nets on the Mexican side of the river to collect crawfish.

Fish would be minimally impacted by dredging activities in the Project Area. Temporary increases in turbidity and equipment noise and activity will cause avoidance by mobile species such as fish. Such impacts will cease when dredging is completed.

Benthic organisms in the dredged material should be directly impacted; however, the area represents a minor portion of river bottom that the impact to those organisms will not affect the ecosystem. Further, birds and fish, due to their mobile nature, would be able to avoid the dredging equipment and sustain no long-term ill effects from the Proposed Action.

4.9.2 Proposed Action – Option 2

Impacts associated with implementation of Option 2 would be similar to those described under Option 1.

4.9.3 No Action Alternative

Under the No Action Alternative, there would be no change from the baseline condition.

4.10 AIR QUALITY

Impacts to air quality in attainment areas would be considered significant if pollutant emissions associated with the implementation of the federal action caused or contributed to a violation of any national, state, or local ambient air quality standard, exposed sensitive receptors to substantially increased pollutant concentrations, represented an increase of 10 percent or more in affected AQCR's emissions inventory, or exceeded any significance criteria established by the SIP. Impacts to air quality in nonattainment areas would be considered significant if the net change in proposed pollutant emissions caused or contributed to a violation of any national, state, or local ambient air quality standard; increased the frequency or severity of a violation of any ambient air quality standard; or delayed the attainment of any standard or other milestone contained in the SIP. With respect to the General Conformity Rule, impacts to air quality would be considered significant if emissions increased a nonattainment or maintenance area's emissions inventory by 10 percent or more for individual nonattainment pollutants; or exceeded *de minimis* threshold levels established in 40 CFR 93.153(b) for individual nonattainment pollutants or pollutants for which an area has been redesignated as a maintenance area.

The Project Area is located within AQCR 213, which is under attainment status for all criteria pollutants; therefore, the General Conformity Rule would not apply.

4.10.1 Proposed Action – Option 1

Fugitive dust from ground disturbing activities and combustive emissions from construction equipment would be generated during construction activities. Fugitive dust would be generated from activities associated with site clearing, grading, cut and fill operations, and from vehicular traffic moving over the disturbed site. These emissions would be greatest during the initial site preparation activities and would vary from day to day depending on the construction phase, level of activity, and prevailing weather conditions.

The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of construction activity. The USEPA has estimated that uncontrolled fugitive dust emissions from ground-disturbing activities would be emitted at a rate of 80 pounds of total suspended particles (TSP) per acre per day of disturbance (USEPA 1995). In a USEPA study of air sampling data at a distance of 50 meters downwind from construction activities, PM_{10} emissions from various open dust sources were determined based on the ratio of PM_{10} to TSP sampling data. The average PM_{10} to TSP ratios for top soil removal, aggregate hauling, and cut and fill operations is reported as 0.27, 0.23, and 0.22, respectively (USEPA 1988). Using 0.24 as the average ratio for purposes of analysis, the emission factor for PM_{10} dust emissions becomes 19.2 pounds per acre per day of disturbance.

The USEPA also assumes that 230 working days are available per year for construction (accounting for weekends, weather, and holidays), and that only half of these working days would result in uncontrolled fugitive dust emissions at the emitted rate described above (USEPA 1995). The construction emissions presented in Table 4.10-1 include the estimated annual PM_{10} and $PM_{2.5}$ emissions associated with Option 1. These emissions would produce slightly elevated short-term PM_{10} and $PM_{2.5}$ ambient air concentrations. The USEPA estimates that the effects of fugitive dust from construction activities would be reduced significantly with an effective watering program. Watering the disturbed area of the construction site twice per day with approximately 3,500 gallons per acre per day would reduce TSP emissions by as much as 50 percent (USEPA 1995).

Table 4.10-1 Proposed Action – Option 1 Air Emissions

Criteria Air Pollutant	CO (tpy)	VOC (tpy)	NOx (tpy)	SOx (tpy)	PM10 (tpy)
Hidalgo County Emissions Inventory[a]	3,674	601	2,615	59	374
Construction Emissions	0.13	0.05	0.44	0.05	0.42
Construction Emissions as Percent of Hidalgo County Emissions	0.00%	0.01%	0.02%	0.08%	0.11%

[a] TNRCC 2003

Note: VOCs are not an air pollutant criterion. However, VOCs are reported because, as an O_3 precursor, it is a controlled pollutant.

Specific information describing the types of construction equipment required for a specific task, the hours the equipment is operated, and the operating conditions vary widely from project to project. For purposes of analysis, these parameters were estimated using established cost estimating methodologies for construction and experience with similar types of construction projects (Means 2002). Combustive emissions from construction equipment exhausts were estimated by using USEPA-approved emissions factors for heavy-duty diesel-powered construction equipment (USEPA 1985). The construction emissions presented in Table 4.10-1 include the estimated annual emissions from construction equipment exhaust associated with the Proposed Action. As with fugitive dust emissions, combustion emissions would produce slightly elevated air

pollutant concentrations. However, the effects would be temporary, fall off rapidly with distance from the proposed construction site, and would not result in any long-term impacts.

All vegetation resulting from clearing activities would be deposited on the Mexican riverbank and appropriately disposed by the Mexican Contractor. It is likely the material would be chipped in place on the island and managed along with the dredged sediment. Another option is burning the material after it has been cleared. Outdoor burning activities require compliance with specific TCEQ guidelines and prior notification of intent to the appropriate commission regional office (§§111.209-.219, TCEQ 1996).

In summary, emissions from the construction activities for Option 1 would be temporary and would be eliminated when the activities are completed, and would not be regionally significant.

4.10.2 Proposed Action – Option 2

Significance criteria for Option 2 would be the same as that stated for Option 1 in subchapter 4.10.1. Under Option 2, construction activity would increase slightly due to the additional use of cranes and other mechanical dredging equipment.

The methodologies used to estimate emissions from ground disturbing activities and combustive emissions from construction equipment for Option 1 were used to determine the emissions for Option 2. Table 4.10-2 lists the emissions anticipated from Option 2 and compares the emissions to the baseline emissions inventory for Hidalgo County.

Similar to Option 1, all vegetation resulting from clearing activities would be deposited on the Mexican riverbank and appropriately disposed by the Mexican Contractor. It is likely the material would be chipped in place on the island and managed along with the dredged sediment. Additionally, if the material were burned then specific TCEQ guidelines would have to be followed as described in subchapter 4.10.1.

Table 4.10-2 Proposed Action – Option 2 Air Emissions

Criteria Air Pollutant	CO (tpy)	VOC (tpy)	NO_X (tpy)	SO_X (tpy)	PM_{10} (tpy)
Hidalgo County Emissions Inventory[a]	3,674	601	2,615	59	374
Construction Emissions	0.52	0.16	1.64	0.18	0.51
Construction Emissions as Percent of Hidalgo County Emissions	0.014%	0.027%	0.063%	0.305%	0.136%

[a] TNRCC 2003

Note: VOCs are not an air pollutant criterion. However, VOCs are reported because, as an O_3 precursor, it is a controlled pollutant.

Emissions from ground disturbing, construction, and dredging activities would last only as long as the duration of construction activity, fall off rapidly with distance from the construction site, and would not result in long-term impacts.

The construction emissions presented in Table 4.10-2 include the estimated annual emissions from construction equipment exhaust associated with Option 2. As with fugitive dust emissions, combustion emissions would produce slightly elevated air pollutant concentrations. However, the effects would be temporary, fall off rapidly with distance from the proposed construction site, and would not result in any long-term impacts.

In summary, emissions from the construction activities would be temporary and would be eliminated when the activities are completed, and would not be regionally significant.

4.10.3 No Action Alternative

Under the No Action Alternative, emissions would continue at the levels generated under the baseline condition.

4.11 NOISE

4.11.1 Proposed Action – Option 1

Operation of heavy-duty equipment, increased trucking activity, and increased transportation of workers to and from the Project Area would increase noise levels during implementation of Option 1 at the Project Area. Noise from equipment would be intermittent and of short-term duration and since there are no sensitive receptors near the Project Area, there would be minimal noise impacts from the proposed activities.

Assuming that noise from the dredging equipment radiates equally in all directions, sound intensity will diminish inversely as the square of the distance from the source. Therefore, in a free field (no reflections of sound), the sound pressure level decreases 6 decibels with each doubling of the distance from the source. Under most conditions, reflected sound will reduce in attenuation because of distance.

Additional dredge pumps and equipment required over and above that used for routine maintenance dredging would be the primary source of noise from the proposed activities. Typical noise levels generated by this equipment range from 75 to 89 decibels at 50 feet from the source. Noise from these additional dredge pumps and equipment will be intermittent and of short-term duration. Since implementation of Option 1 would not exceed any federal and local noise guidelines and regulations, and there are no sensitive receptors in the vicinity of Project Area, there would be no noise impacts from the proposed activities.

4.11.2 Proposed Action – Option 2

Impacts associated with implementation of Option 2 would be similar to those described under Option 1.

4.11.3 No Action Alternative

Under the No Action Alternative, the noise environment would not change from the baseline condition.

4.12 CULTURAL RESOURCES

4.12.1 Proposed Action – Option 1

Correspondence from the Texas Historical Commission (THC) concerning the removal of the sediments from the Project Area stated that the Proposed Action should not have an effect on cultural resources eligible for inclusion in the National Register of Historic Places (NRHP). The THC acknowledged that although construction of storage and dewatering facilities and field offices has the potential to damage cultural resources, these activities would be restricted to the Mexican riverbank and beyond their jurisdiction. Appendix A contains the letter to the USIBWC from THC concerning their review of the project.

Additionally, no archaeological or historical resources of cultural significance were identified within the Project Area or within a 1-mile radius during the environmental database search of historic sites according to previous cultural resource investigations within the Project Area (USIBWC 2003d; EDR 2003). If buried cultural materials are encountered during construction, the contractor would cease work in the immediate area and notify the State Historic Preservation Officer.

4.12.2 Proposed Action – Option 2

Impacts associated with implementation of Option 2 would be the same as those described under Option 1.

4.12.3 No Action Alternative

Under the No Action Alternative, removal of the island and sandbar downstream of the Retamal Diversion Dam would not occur; therefore, no disturbance of cultural resources would occur.

4.13 HAZARDOUS AND TOXIC WASTE

4.13.1 Proposed Action – Option 1

Hazardous and/or toxic products (*e.g.*, fuel, oil, grease, and hydraulic fluid) would be used in the dredging and construction equipment used for the proposed project.

Implementing established industry practices for controlling releases of these substances would reduce the possibility of accidental releases of these hazardous and toxic products. Preventative maintenance and daily inspections of the equipment would ensure that any releases of these hazardous and toxic products are minimized. All visible dirt, grime, grease, oil, loose paint, etc., would be removed from the equipment prior to use at the site.

In the event of a catastrophic release of hazardous and toxic products, containment booms or equivalent barriers would be used to control dispersion and reduce the possibility of polluting the Project Area and other resources. Containment barriers would make product recovery much simpler. A skimmer would subsequently be used to extract any floating material released into the water surface.

Since the risk of an accidental release of hazardous and/or toxic chemicals or waste is minimal, and implementation of Option 1 would not result in noncompliance with applicable federal or state regulations, it is anticipated that there would be no hazardous and/or toxic waste impacts from the proposed activities.

A review of available historical aerial photographs was conducted to assist in identifying past land uses and potential environmental contamination sources, and to verify other information found in the records search. Results of the review did not reveal any potential sites within the Project Area or surrounding areas.

4.13.2 Proposed Action – Option 2

Impacts associated with implementation of Option 2 would be the same as those described under Option 1.

4.13.3 No Action Alternative

Under the No Action Alternative, removal of the island and sandbar downstream of the Retamal Diversion Dam would not occur; therefore, dredging and construction activities would not take place.

4.14 SOCIOECONOMICS

4.14.1 Proposed Action – Option 1

Changes in population resulting from dredging and construction activities are not anticipated. Workers would most likely come from the local labor force in Progreso, Weslaco, and the Donna area. Due to the proximity (no more than 9 miles) of the labor force to the Project Area, it is expected that workers would commute to the work site and not relocate. Therefore, adverse consequences to population, housing, and community infrastructure would not occur.

Beneficial effects to employment would occur during the construction period; however, the benefits would be short-term and would not measurably affect the county-

wide unemployment rate of 13.7 percent in 2001 (Texas A&M University 2003). The project would generate income to the local economy. The amount would be small compared to the county's total income of $3.6 billion (average weekly wage of $415 for 167,733 employed in 2001) (Texas A&M University 2003); therefore, beneficial effects to Hidalgo's economy would be negligible.

Local roadways could experience short-term adverse consequences resulting from increased traffic during the construction period as workers commute to and from the work site; however, the consequence would be short-term.

4.14.2 Proposed Action – Option 2

Impacts associated with implementation of Option 2 would be the same as those described under Option 1.

4.14.3 No Action Alternative

Under the No Action Alternative, removal of the island and sandbar downstream of the Retamal Diversion Dam would not occur; therefore, dredging and construction activities would not take place. Consequently, there would no change to existing population, housing, and community infrastructure. Additionally, the No Action alternative would not have any measurable consequence, beneficial or adverse, to income and employment.

4.15 ENVIRONMENTAL JUSTICE

4.15.1 Proposed Action – Option 1

Data indicate that Hidalgo County has disproportionately high minority (approximately 89 percent) and low-income populations (individuals – 35.9 percent); however, land use adjacent to the Project Area is primarily rural and designated a wilderness area. Adverse consequences to disproportionately high minority and low-income populations resulting from construction activities associated would not occur.

4.15.2 Proposed Action – Option 2

Impacts associated with implementation of Option 2 would be the same as those described under Option 1.

4.15.2.1 No Action Alternative

Under the No Action Alternative, removal of the island and sandbar downstream of the Retamal Diversion Dam would not take place; therefore, the situation for minority and low-income populations would remain unchanged.

4.16 MITIGATION MEASURES

No significant environmental impacts have been identified for implementation of the Proposed Action. Best management practices would be implemented to minimize potential environmental impacts. Removal of the island would require a Department of the Army (DA) permit under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act (CWA) if mechanized dredging is considered. The DA permit is required for dredging activities in the Rio Grande and would address T&E species, wetlands mitigation, and BMPs. The USIBWC participated in a Pre-Application/Joint Evaluation Meeting with the USACE, the USFWS, and the TPWD concerning the Proposed Action to facilitate the permitting application process. Additionally, the USIBWC is working with The Nature Conservancy in identifying several mitigation projects in the southern part of Texas along a bend of the Rio Grande to offset the loss of 2.1 acres of wetlands. The Nature Conservancy has identified 10 acres in the Lennox Foundation Southmost Preserve, which is east of Brownsville in Cameron County, as a potential area for mitigation purposes for the USIBWC.

4.17 UNAVOIDABLE ADVERSE IMPACTS

Unavoidable environmental impacts would result from implementation of the Proposed Action; however, none of the impacts would be significant. The dredging activities would have unavoidable adverse impacts on biological, wetland, and fisheries resources. The loss of 2.1 acres of productive wetlands, although not unique, would require mitigation. This impact to benthic invertebrates would be localized and not likely effect area populations. The impact to prey and maturing fish would be the loss of backwater habitat.

4.18 RELATIONSHIP BETWEEN THE SHORT-TERM USE OF THE ENVIRONMENT AND LONG-TERM PRODUCTIVITY

It is a 1970 Boundary Treaty requirement to maintain the international boundary between the U.S. and Mexico. The USIBWC and MXIBWC are obligated to perform this maintenance dredging to clear sediment buildup in the river and prevent scouring of the Mexican shoreline to maintain the integrity of the International boundary.

The sediment buildup that created the sandbar and island occurred over several years resulting in a benefit to biological resources in the area. The island has grown to a point where maintenance measures are required to carry out Article 4, Section B of the 1970 Boundary Treaty requirements for boundary preservation. The water regimes of the river would likely cause sediment buildup to begin after dredging operations are completed requiring future maintenance operations when the sediment buildup reaches a stage where it impacts the flood control capacity of the river or causes the main channel in the river to shift the international boundary.

4.19 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

NEPA requires that environmental analysis include identification of "... any irreversible and irretrievable commitments of resources which would be involved in the Proposed Action would it be implemented." Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects the use of these resources would have on consumption or destruction of a resource that could not be replaced in a reasonable period of time. The irreversible environmental changes that could result from implementation of the Proposed Action include consumption of material resources, energy resources, and human resources.

Material resources used for the Proposed Action include building materials for construction of coffer dams, temporary brides for dredging operations, or the shoring of embankments. The materials that would be consumed are not in short supply and are readily available from suppliers in the region. Use of these materials would not limit other unrelated construction activities and, therefore, would not be considered significant.

Energy resources would be irretrievably lost. These include petroleum-based products such as gasoline and diesel fuel. During dredging operations, gasoline and diesel fuel would be used for operation of equipment and other vehicles. Consumption of these energy resources would not place a significant demand on their availability in the region. Therefore, no adverse impacts would be expected.

The use of human resources for dredging operations is considered an irretrievable loss, only in that it would preclude such personnel from engaging in other work activities. However, the use of human resources for the Proposed Action represents employment opportunities and is considered beneficial.

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SECTION 5
LIST OF PREPARERS AND CONTRIBUTORS

Table 5-1 lists the persons involved in preparing the Environmental Assessment for the Sediment Removal Downstream of Retamal Diversion Dam project.

Table 5-1 Preparers of the Environmental Assessment

Name	Degree and/or Certification	Project Role	Years Experience	Background
Parsons (Environmental Consultant)				
R. C. Wooten	Ph.D., Biology/Ecology	Technical Director	34	Environmental Conservation and Planning
Anthony Davis, P.E.	BS Civil Engineering	Project Manager	26	NEPA Compliance, EIS, EA, EBS and P2 Studies
James Hinson	M.S., Wildlife Science	Biologist	16	Coastal Biology, Remote Sensing, GIS, NEPA Compliance
Christopher Ryon	BS Environmental Engineering	Environmental Engineer	7	NEPA Compliance, EA, EBS and Water Quality Analyses
Kate Griffin	B.A,. Geography-Landscape Ecology M.S, Geography-Environmental Resource Studies	Air Quality, Threatened and Endangered Species	5	Environmental Geography and Landscape Ecology
Peggy Roberts	B.J. Journalism/Public Relations MBA	Socioeconomics and Environmental Justice	9	NEPA Compliance, EIS, EA, EBS
Sherrie Keenan	B.A., Journalism	Technical Editor	27	Technical Editor and Writer - Various Industries

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SECTION 6
APPLICABLE REGULATORY REQUIREMENTS

The purpose of this section is to review the regulatory framework that applies to the Proposed Action, evaluate the applicability of various regulations, and identify the required level of USIBWC coordination. This framework would also apply to similar future actions by USIBWC involving dredging or excavation in waters of the United States. Table 6.1 provides a summary of the various regulatory permitting requirements as well as coordination of the applicable agencies for the Proposed Action.

Table 6.1 Regulatory/Permitting Requirements Potentially Applicable to the Proposed Action and Required Level of USIBWC/Agency Coordination

Agency	Regulation	Level of USIBWC Coordination with Agency
USACE	Section 10 of the Rivers and Harbors Act of 1899 Section 404 of the Clean Water Act (33 U.S.C 1344: known as section 404)	Individual Section 10/404 USACE will be required Modification of the mitigation plan could be requested by commenting resource agencies. Approximate 6-month review time. Duration of permit for maintenance dredging may not exceed 10 years (33 CFR 325.6(e)). **The permit will require a sediment analyses, wetlands delineation, wetlands mitigation plan and assessment of potential impacts to listed species.**
USIBWC	National Environmental Policy Act of 1969 (as amended) (42 U.S.C 4321 *et seq.*) Regulations for implementing the Procedural provision of NEPA) 40 CFR 1500-1508, November 1978) (CEQ) CEQ information memorandum to Agencies (46 FR 18026-38, March 23, 981)	Requires preparation of an EA, FONSI, or EIS for federally funded projects. Review of the USIBWC NEPA procedures indicates that an EA is required. Review of detailed regulations for preparing an EA, EIS and FONSI. Review of answers to 40 most asked questions.
TCEQ	Section 401 of the Clean Water Act (33 U.S.C. 1344; known as section 401)	401 Certification, coordination is typically a function of USACE permit process. However a sediment sampling plan and DOPAA will be provided to the TCEQ preliminary to permit application. USACE will determine if project considered Tier I or Tier II (likely). May suggest 404/401 permit conditions and mitigation measures.

Table 6.1 Regulatory/Permitting Requirements Potentially Applicable to the Proposed Action and Required Level of USIBWC/Agency Coordination (*…continued*)

Agency	Regulation	Level of USIBWC Coordination with Agency
USEPA	Section 404 of the Clean Water Act Section 26.040 of Texas Water Code and Section 402 of the Clean Water Act	Coordination is a function of USACE permit process. However a DOPAA will be provided to the USEPA preliminary to permit application. Coordinate with the U.S. dredging contractor who prepares USEPA Construction Site Stormwater NPDES permit and Stormwater Pollution Prevention Plan. The plan will be submitted by the contractor.
USFWS	Endangered Species Act of 1973 (PL 93-205) and amendments of 1988 (PL 100-478) FWS Coordination Act 916 U.S.C. 661 et seq.)	Although coordination is a function of USACE permit process, informal consultation will be conducted to assure concurrence with potential impact assessment. Early participation will be assured by agency site visits (USFWS regulatory branch and Refuge branch) and submittal of the DOPAA for early review. Section 7 of act requires formal consultation if significant adverse impacts to federally listed species will occur due to the Proposed Action (not likely to occur based on preliminary assessment and discussions with USFWS). Coordinate with USFWS to determine if migratory birds and T&E species were affected. May suggest permit conditions and mitigation measures. Requires federal agencies to consult with USFWS regarding impact of Proposed Action.
Executive orders	EO 11990 on wetlands (42 FR 26961)	Avoid adverse impacts to wetlands
TPWD	Chapters 67 and 68 of the TPWD Code, and Section 65.171-65.184 of the Texas Administrative Code	Although coordination a function of USACE permit process, coordination recommended to assure concurrence with impacts and mitigation plan. A DOPAA will be provided to the TPWD preliminary to permit application.
State Historic Preservation Office (SHPO)	National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 et seq.)	Ensure compliance with Section 106. May suggest permit conditions and mitigation measures. A DOPAA will be provided to the SHPO preliminary to permit application.
Mexican Section of the USIBWC	Among others, the Convention of March 1, 1889 and the Treaty of February 3, 1944 Water Treaty for the "Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande"	The Mexican Section of the IBWC can facilitate compliance with Mexican regulations and notification of appropriate authorities. The USIBWC will provide a DOPAA to the MxIBWC.

Table 6.1 Regulatory/Permitting Requirements Potentially Applicable to the Proposed Action and Required Level of USIBWC/Agency Coordination (*…continued*)

Agency	Regulation	Level of USIBWC Coordination with Agency
Comisión Nacional de Agua, CNA (National Water Commission of Mexico)	Ley De Aguas Nacionales (National Water Law) Articles 157, 171, & 172.	Permission for river dredging and use of riverbanks. The USIBWC will provide a DOPAA to the CNA.

6.1 USACE COORDINATION AND PERMIT REQUIREMENTS

The USACE (Department of the Army) is the primary agency regulating activity in navigable waters of the United States under the Rivers and Harbors Act and the CWA. To receive USACE authorization, applicants must also comply with applicable federal and state regulations. USACE permits are reviewed by other agencies to assure compliance. Under typical USACE permitting procedures, most of these regulatory issues would be addressed as part of the Section 404 permitting process.

This type of activity (Proposed Action) would normally be authorized under an individual USACE permit. The individual permit would include such information as likely scenarios for ongoing maintenance, type of equipment to be used, methods of operation, disposal of dredged material, BMPs, and environmental protections.

The major environmental issues normally addressed for an individual USACE permit are:

- Threatened/endangered species;
- 401(c) certification under the CWA;
- Protection of cultural resources; and
- BMPs.

The USACE would likely defer to the TPWD and the USFWS on wildlife issues such as preferred location for disposal of dredged material.

6.1.1 USACE Regulatory Framework

Dredging of the sandbar would be subject to Section 10 and Section 404 regulation, since the Rio Grande is a navigable water of the United States. The USIBWC is not currently permitted to perform dredging in the LRGFCP.

6.1.2 USACE Individual Permit Requirements

To obtain an individual USACE permit, the applicant submits a DA application.

The USACE permit application is reviewed by federal and state natural resources protection agencies, which may provide comments and suggestions for mitigation measures. There is also opportunity for public input through a public notice process and possible public hearing.

6.1.2.1 Section 401 Water Quality Certification

The TCEQ performs a Section 401 water quality certification for USACE permits to ensure the permitted action is in compliance with state water quality standards. For projects disturbing 3 acres or less, or 1,500 linear feet or less of streams, the applicant must complete a Tier I checklist and incorporate the list's BMPs into the project. Incorporation of BMPs allows the permit application to proceed without further review by TCEQ. Any project that does not qualify for a Tier I review or for which the applicant elects not to incorporate Tier I criteria or prefers to use alternatives, will be considered a Tier II project. Tier II projects are subject to an individual certification review by TCEQ. Failure to implement BMPs may result in enforcement action by TCEQ.

6.1.2.2 Texas Parks and Wildlife Regulations

TPWD regulations prohibit taking, possessing, transporting, or selling any animal species designated by state law as endangered or threatened without the issuance of a permit. USACE permits are reviewed by the TPWD for potential impact on state-listed threatened or endangered species. TPWD will determine if the Proposed Action triggers the need for a state permit and may suggest mitigation measures to minimize impacts on threatened and endangered species and other fish and wildlife.

6.1.3 Regulatory Review

Additional federal regulations applicable to the Proposed Action are discussed in the following section.

6.1.4 NEPA

The NEPA of 1969 (amended) (Title I Section 102 [42 USC §4332](C)) is the federal regulation requiring assessment of environmental impacts for "major federal actions significantly affecting the quality of the human environment." To comply with NEPA and CEQ regulations, federal agencies generally prepare an EIS for major federal actions, and EA for actions that have no significant impact on the environment. Agencies may also identify actions that meet requirements for a Categorical Exclusion.

Review of the USIBWC NEPA procedures indicates the Proposed Action will not qualify as Categorical Exclusion and that an EA will be required.

Upon receiving a permit application, the USACE will immediately perform a preliminary review to determine the level of NEPA documentation. This information is included in the USACE public notice.

6.1.5 USEPA

The USEPA jointly administers Section 404 regulations with the USACE and reviews all USACE permit applications. The USEPA has the right to veto any permit application. The USEPA may also provide comments including suggestions for permit conditions and mitigation measures.

The USEPA also administers the National Pollutant Discharge Elimination System (NPDES) stormwater pollution prevention regulations. A construction stormwater pollution prevention plan (SWPPP) is required under this program for any construction site of 1 acre or more of disturbed land. The Proposed Action will disturb an area more than 2 acres; therefore, stormwater pollution prevention regulations do apply to this project. Preparation of a SWPPP is the responsibility of the dredging contractor.

6.1.5.1 Endangered Species Act

Section 7 of the Endangered Species Act directs all federal agencies to use existing authorities to conserve threatened and endangered species and, in consultation with the USFWS, ensure that their actions do not jeopardize listed species or destroy or adversely modify critical habitat. If listed species are present, the federal agency must determine if the action may affect them. If the federal agency determines that the action is likely to adversely affect listed species, then it must request initiation of formal Section 7 consultation.

USACE permits are reviewed by the USFWS for potential impact on threatened or endangered species pursuant to the Endangered Species Act. If the action may affect threatened or endangered species or critical habitat, a statement to this effect will be included in the public notice for the USACE permit. No discharge of dredged or fill material will be permitted if it jeopardizes the continued existence of threatened or endangered species.

6.1.5.2 Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 (16 USC 703) makes it illegal to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued pursuant to federal regulations. Take includes destruction of nests or eggs due to construction activities. The migratory bird species protected under the Act are listed in 50 CFR 10.13. While reviewing USACE permits, the USFWS will evaluate potential impacts on migratory birds and may recommend mitigation measures to minimize any impacts.

6.1.5.3 National Historic Preservation Act

Any federal undertaking must comply with Section 106 of the National Historic Preservation Act. This Act contains treatment and protection standards that ensure preservation and/or reduction of adverse effects on significant historic sites (*e.g.* buildings, structures, archaeological sites). USACE review of permits includes a review for compliance with this Act.

To ensure compliance with Section 106, the federal agency collects information to determine if historic properties are affected, and consults with the SHPO, located at the THC. If it is determined that no historic properties are affected, documentation of this (typically a letter) is provided to the SHPO. The potential impact on significant historic sites will be considered as part of the EA process.

6.1.5.4 CNA and MxIBWC

Anyone planning to change the course of national waters (including dredging activities) must request permission from the Comision Nacionál de Agua (CNA) and demonstrate that flow and downstream parties will not be negatively affected. CNA will review projects, accept or reject projects, and recommend modifications to minimize negative impacts to hydraulic flow, personal security and well being, water quality, and the rights of third parties (Article 157). Article 171 of the National Water Law specifically states that dredging activities may only be carried out with permission from CNA. The permits to authorize these projects must include: name and contact information, timeframe for the project, technical requirements with which the project will comply, and appropriate land use requests (Article 172).

In addition to notifying and receiving the necessary permits from the CNA and Mexican Section of the IBWC, the USIBWC should consider notifying the state environmental authority for Tamaulipas, Secretaria de Desarollo Urbano y Ecología, (Department of Urban Development and Ecology) and the local county-equivalent authority, presumably the Município de Rio Bravo. Though preliminary analysis found no Mexican state or local laws requiring this communication, it may be legally required and is worth confirming with CNA and the MxIBWC.

SECTION 7
PERSONS AND AGENCIES CONSULTED

This section lists the individuals consulted during preparation of this EA.

7.1 FEDERAL AGENCIES

United States Army Corps of Engineers, Galveston District
Corpus Christi Regulatory Office

Mr. Lloyd Mullins, Unit Leader
Ms. Marie Pattillo, Project Manager

U.S. Fish and Wildlife Service - Ecological Services

Mr. Beau Hardegrea, Ecological Restoration
Ms. Brunilda Fuentes-Capazello, Fish and Wildlife Biologist
Mr. Ernesto Reyes, Fish and Wildlife Biologist Mr. Jeff Rupert, Refuge Manager LRGV National Wildlife Refuge

International Boundary and Water Commission, United States Section

Mr. Christopher Anzaldua, Assistant Project Manager, Mercedes Field Office
Mr. Daniel Borunda, Environmental Protection Specialist
Mr. Luis Hernandez, Civil Engineer O & M Division
Mr. Enrique Reyes, Project Manager, Mercedes Field Office

7.2 STATE AGENCIES

Texas Commission on Environmental Quality

Mr. Michael Cowan, Director Water Quality Division
Mr. Mark Fisher, Water Quality Assessment Section
Ms. Sidne Tiemann, Water Quality Division

Texas Parks and Wildlife Department

Mr. Ismael Nava, TAMUCC Natural Resources Center
Ms. Mary Ellen Vega, Restoration Protection

Texas Historical Commission

Mr. William Martin, Texas Historical Commission
Mr. F. Lawrence Oaks, State Historic Preservation Officer

7.3 HIDALGO COUNTY

Environmental Health Department

Mr. Mike Keenan, Director of Environmental Health Department
Mr. Godfrey Garcia, Hidalgo County Drainage Department

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APPENDIX A
INTERAGENCY COORDINATION AND CORRESPONDENCE

1

2

PARSONS

8000 Centre Park Drive, Suite 200 • Austin, Texas 78754 • (512) 719-6000 • Fax: (512) 719-6099 • www.parsons.com

March 18, 2003

Lloyd Mullins, Unit Leader, USACE
Corpus Christi Field Office
5151 Flynn Parkway, Suite 306
Corpus Christi, Texas 78411

Dear Mr. Mullins:

The United States Section, International Boundary and Water Commission (USIBWC) contracted with Parsons to conduct an environmental assessment (EA) for the proposed action to remove sediment material downstream of the Retamal Diversion Dam located in the Lower Rio Grande Flood Control Project (LRGFLP) near Mercedes, Texas.

Retamal Dam is located approximately 8 miles south of Weslaco in Hidalgo County, Texas at river mile 132.5. The diversion dam was constructed jointly by the USIBWC and Mexico in 1973. The dam is about 182 feet wide and 88 feet long and contains three radial gates that regulate river flows. The dam is an integral part of the LRGFCP. Its primary function is to force all flood flows in excess of the safe capacity of the channel (20,000 cfs design flow) through the Mexican Floodway of the Rio Grande between the dam and the Gulf of Mexico.

The purpose for removing the sediment is to allow the hydraulic system to pass the design flood flow effectively in the river. Currently, sediment has accumulated below the diversion dam, and is impairing the ability to pass the design flood flow designated by the US and Mexico. Removal of the sediment material is necessary to provide immediate flood control relief below the diversion dam.

USIBWC is extending an invitation to resource agencies to attend a site visit and Project kick-off meeting on the morning of March 27. We would like to meet at the Mercedes USIBWC Field Office located at 325 Golf Course Rd., Mercedes, TX, 78570 and caravan to the project site. The USIBWC would like to have early input by resource agencies concerning the proposed project, environmental concerns and potential mitigation options. USIBWC expects to complete a description of the proposed action and alternatives (DOPAA) by the second week of May 2003 and would welcome early input by resource agencies.

Attached are a project location map, site photographs, and sample engineering cross-section graphs (preliminary), and other related information. If you have any questions, please contact Anthony Davis, Parsons Project Manager (512/719-6022) or Daniel Borunda, USIBWC Project Technical Representative (915/832-4701).

Sincerely,

Anthony Davis

Anthony Davis, P.E.
Project Manager

Acd: SK
Attachments

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8000 Centre Park Drive, Suite 200 • Austin, Texas 78754 • (512) 719-6000 • Fax: (512) 719-6099 • www.parsons.com

March 18, 2003

Brunilda Fuentes-Capozello
Corpus Christi Ecological Services USFWS Field Office
6300 Ocean Drive, Campus Box 338
Corpus Christi, Texas 78412-5599

Dear Ms Fuentes-Capozello:

The United States Section, International Boundary and Water Commission (USIBWC) contacted Parsons to conduct an environmental assessment (EA) for the proposed action to remove sediment material downstream of the Retamal Diversion Dam located in the Lower Rio Grande Flood Control Project (LRGFLP).

Retamal Dam is located approximately 8 miles south of Weslaco in Hidalgo County, Texas at river mile 132.5. The diversion dam was constructed jointly by the USIBWC and Mexico in 1973. The dam is about 182 feet wide and 88 feet long and contains three radial gates that regulate river flows. The dam is an integral part of the LRGFCP. Its primary function is to force all flood flows in excess of the safe capacity of the channel (20,000 cfs design flow) through the Mexican Floodway of the Rio Grande between Retamal and the Gulf of Mexico.

The purpose for removing the sediment is to allow the hydraulic system to pass the design flood flow effectively in the river. Currently, sediment has accumulated below the Retamal Diversion Dam, and is impairing the ability to pass the design flood flow designated by the US and Mexico. Removal of the sediment material is necessary to provide immediate flood control relief below Retamal Diversion Dam.

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Project Manager

Acd: SK
Attachments

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March 18, 2003

Mark Fisher
Texas Commission on Environmental Quality
Water Quality Assessment Section, MC 150
P.O. Box 13087
Austin, TX 78711-3087

Dear Mr. Fisher:

The United States Section, International Boundary and Water Commission (USIBWC) contacted Parsons to conduct an environmental assessment (EA) for the proposed action to remove sediment material downstream of the Retamal Diversion Dam located in the Lower Rio Grande Flood Control Project (LRGFLP).

Retamal Dam is located approximately 8 miles south of Weslaco in Hidalgo County, Texas at river mile 132.5. The diversion dam was constructed jointly by the USIBWC and Mexico in 1973. The dam is about 182 feet wide and 88 feet long and contains three radial gates that regulate river flows. The dam is an integral part of the LRGFCP. Its primary function is to force all flood flows in excess of the safe capacity of the channel (20,000 cfs design flow) through the Mexican Floodway of the Rio Grande between Retamal and the Gulf of Mexico.

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Sincerely,

Anthony Davis

Anthony Davis, P.E.
Project Manager

Acd: SK
Attachments

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8000 Centre Park Drive, Suite 200 • Austin, Texas 78754 • (512) 719-6000 • Fax: (512) 719-6099 • www.parsons.com

March 18, 2003

Ismael Nava
Texas Parks and Wildlife Department
TAMUCC, Natural Resources Center
6300 Ocean Drive, Suite 2501
Corpus Christi, Texas 78412

Dear Mr. Nava:

The United States Section, International Boundary and Water Commission (USIBWC) contacted Parsons to conduct an environmental assessment (EA) for the proposed action to remove sediment material downstream of the Retamal Diversion Dam located in the Lower Rio Grande Flood Control Project (LRGFLP).

Retamal Dam is located approximately 8 miles south of Weslaco in Hidalgo County, Texas at river mile 132.5. The diversion dam was constructed jointly by the USIBWC and Mexico in 1973. The dam is about 182 feet wide and 88 feet long and contains three radial gates that regulate river flows. The dam is an integral part of the LRGFCP. Its primary function is to force all flood flows in excess of the safe capacity of the channel (20,000 cfs design flow) through the Mexican Floodway of the Rio Grande between Retamal and the Gulf of Mexico.

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Sincerely,

Anthony Davis

Anthony Davis, P.E.
Project Manager

Acd: SK
Attachment

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8000 Centre Park Drive, Suite 200 • Austin, Texas 78754 • (512) 719-6000 • Fax: (512) 719-6099 • www.parsons.com

May 9, 2003

Lloyd Mullins, Unit Leader, USACE
Corpus Christi Field Office
5151 Flynn Parkway, Suite 306
Corpus Christi, Texas 78411

Dear Mr. Mullins:

The United States Section of the International Boundary and Water Commission (USIBWC) plans to prepare an Environmental Assessment to assess the potential environmental impacts of removing sediment downstream of Retamal Diversion Dam in the Lower Rio Grande Flood Control Project. On behalf of the USIBWC, Parsons has prepared the attached Description of the Proposed Action and Alternatives (DOPAA) which provides details of the action, explains the purpose and need for the action, and discusses alternatives to the action.

According to the National Environmental Policy Act (NEPA), the USIBWC must assess the potential environmental impacts of the proposed and alternative actions. In accordance with USIBWC Operational Procedures for Implementing Section 102 of the National Environmental Policy Act of 1969, Other Laws Pertaining to Specific Aspects of the Environment and Applicable Executive Orders (46FR44083, September 2, 1981),the USIBWC is requesting input from other federal, state, and local agencies on the proposal. Please identify any resources within your agency's purview that may be potentially impacted. Maps and graphics are included within the DOPAA to assist your office in reviewing the proposal.

Please provide any comments or information by June 2, 2003. Responses should be sent directly to:

Mr. Daniel Borunda
Environmental Protection Specialist
United States Section, International Boundary and Water Commission
4171 N. Mesa, C-100
El Paso, Texas 79902

Your assistance in providing information is greatly appreciated. If you have any questions, please call Mr. Borunda at (915) 832-4701.

Sincerely,

Anthony Davis, P.E.
Project Manager

Attachment: DOPAA

PARSONS

8000 Centre Park Drive, Suite 200 • Austin, Texas 78754 • (512) 719-6000 • Fax: (512) 719-6099 • www.parsons.com

May 9, 2003

Brunilda Fuentes-Capozello
Corpus Christi Ecological Services USFWS Field Office
6300 Ocean Drive, Campus Box 338
Corpus Christi, Texas 78412-5599

Dear Ms. Fuentes-Capozello:

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Project Manager

Attachment: DOPAA

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May 9, 2003

Mark Fisher
Texas Commission on Environmental Quality
Water Quality Assessment Section, MC 150
P.O. Box 13087
Austin, Texas 78711-3087

Dear Mr. Fisher:

The United States Section of the International Boundary and Water Commission (USIBWC) plans to prepare an Environmental Assessment to assess the potential environmental impacts of removing sediment downstream of Retamal Diversion Dam in the Lower Rio Grande Flood Control Project. On behalf of the USIBWC, Parsons has prepared the attached Description of the Proposed Action and Alternatives (DOPAA) which provides details of the action, explains the purpose and need for the action, and discusses alternatives to the action.

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Environmental Protection Specialist
United States Section, International Boundary and Water Commission
4171 N. Mesa, C-100
El Paso, Texas 79902

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Sincerely,

Anthony Davis, P.E.
Project Manager

Attachment: DOPAA

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May 9, 2003

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Texas Parks and Wildlife Department
TAMUCC, Natural Resources Center
6300 Ocean Drive, Suite 2501
Corpus Christi, Texas 78412

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Environmental Protection Specialist
United States Section, International Boundary and Water Commission
4171 N. Mesa, C-100
El Paso, Texas 79902

Your assistance in providing information is greatly appreciated. If you have any questions, please call Mr. Borunda at (915) 832-4701.

Sincerely,

Anthony Davis, P.E.
Project Manager

Attachment: DOPAA

PARSONS

8000 Centre Park Drive, Suite 200 • Austin, Texas 78754 • (512) 719-6000 • Fax: (512) 719-6099 • www.parsons.com

May 9, 2003

Jeff Rupert
Refuge Manager
Lower River Grande Valley
National Wildlife Refuge
Department of the Interior
Rt 2 Box 202-A
Alamo, Texas 78516

Dear Mr. Rupert:

The United States Section of the International Boundary and Water Commission (USIBWC) plans to prepare an Environmental Assessment to assess the potential environmental impacts of removing sediment downstream of Retamal Diversion Dam in the Lower Rio Grande Flood Control Project. On behalf of the USIBWC, Parsons has prepared the attached Description of the Proposed Action and Alternatives (DOPAA) which provides details of the action, explains the purpose and need for the action, and discusses alternatives to the action.

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Please provide any comments or information by June 2, 2003. Responses should be sent directly to:

Mr. Daniel Borunda
Environmental Protection Specialist
United States Section, International Boundary and Water Commission
4171 N. Mesa, C-100
El Paso, Texas 79902

Your assistance in providing information is greatly appreciated. If you have any questions, please call Mr. Borunda at (915) 832-4701.

Sincerely,

Anthony Davis, P.E.
Project Manager

Attachment: DOPAA

PARSONS

8000 Centre Park Drive, Suite 200 • Austin, Texas 78754 • (512) 719-6000 • Fax: (512) 719-6099 • www.parsons.com

May 9, 2003

William Martin
Texas Historical Commission
P.O. Box 12276
Austin, Texas 78711-2276

Dear Mr. Martin:

The United States Section of the International Boundary and Water Commission (USIBWC) plans to prepare an Environmental Assessment to assess the potential environmental impacts of removing sediment downstream of Retamal Diversion Dam in the Lower Rio Grande Flood Control Project. On behalf of the USIBWC, Parsons has prepared the attached Description of the Proposed Action and Alternatives (DOPAA) which provides details of the action, explains the purpose and need for the action, and discusses alternatives to the action.

According to the National Environmental Policy Act (NEPA), the USIBWC must assess the potential environmental impacts of the proposed and alternative actions. In accordance with USIBWC Operational Procedures for Implementing Section 102 of the National Environmental Policy Act of 1969, Other Laws Pertaining to Specific Aspects of the Environment and Applicable Executive Orders (46FR44083, September 2, 1981), the USIBWC is requesting input from other federal, state, and local agencies on the proposal. Please identify any resources within your agency's purview that may be potentially impacted. Maps and graphics are included within the DOPAA to assist your office in reviewing the proposal.

Please provide any comments or information by June 2, 2003. Responses should be sent directly to:

Mr. Daniel Borunda
Environmental Protection Specialist
United States Section, International Boundary and Water Commission
4171 N. Mesa, C-100
El Paso, Texas 79902

Your assistance in providing information is greatly appreciated. If you have any questions, please call Mr. Borunda at (915) 832-4701.

Sincerely,

Anthony Davis, P.E.
Project Manager

Attachment: DOPAA

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

May 30, 2003

United States Section
International Boundary and Water Commission
4171 N. Mesa, C-100
El Paso, Texas 79902

Attn: Mr. Daniel Borunda

Re: USACE Permit Application Retamal Diversion Dam

Dear Sir:

The International Boundary and Water Commission (IBWC) proposes to remove an island and additional sedimentation from an area downstream of the Retamal Diversion Dam. The dam is located approximately eight miles south of Weslaco in Hidalgo County, Texas at river mile 129.22. The IBWC prefers to hydraulically dredge the sediment and place it into diked areas in Mexico for subsequent beneficial use.

After preliminary review of this project, the Texas Commission on Environmental Quality (TCEQ) has no objections to this project at this time. However, if new concerns are identified from comments, the TCEQ will submit a comment letter to identify those concerns.

Under Section 2.4.4, a statement is made regarding the effective removal of sediments from the return water leaving the temporary upland cells which will receive the dredged material. TCEQ asks that the any return water leaving the cells which may enter into waters of the United Sates not exceed a total suspended solids (TSS) concentration of 300 mg/l. Please provide detailed information regarding how the sediments will be removed from the return water and how a TSS concentration of 300 mg/l will not be exceed in the return water. The TCEQ also encourages the use of Best Management Practices during and after construction for as long as is necessary to protect water quality.

The TCEQ looks forward to receiving and evaluating other agency or public comments. Please provide any agency comments, public comments, as well as the applicant's comments, to Ms. Sidne Tiemann of the Water Quality Division MC-150, P.O. Box 13087, Austin, Texas 78711-3087. Ms. Tiemann may also be contacted by phone at (512) 239-4606, or by e-mail at *stiemann@tceq.state.tx.us*.

Sincerely,

Michael D. Cowan, Director
Water Quality Division

MF/SGT/emh

cc: U.S. Army Corps of Engineers, Corpus Christi Regulatory Field Office, CESWG-PE-RCC, 5151 Flynn Parkway, Suite 306, Corpus Christi, Texas 78411-4318

TEXAS HISTORICAL COMMISSION

The State Agency for Historic Preservation

RICK PERRY, GOVERNOR

JOHN L. NAU, III, CHAIRMAN

F. LAWERENCE OAKS, EXECUTIVE DIRECTOR

13 June 2003

Sylvia A. Waggoner
Division Engineer
Environmental Management Division
International Boundary and Water Commission
The Commons, Building C, Suite 310
4171 N. Mesa Street
El Paso, Texas 79902

Re: Project review under Section 106 of the National Historic Preservation Act of 1966, DOPAA: *Sediment Removal Downstream of Retamal Diversion Dam, Hidalgo County, Texas* (IBWC)

Dear Ms. Waggoner:

Thank you for the correspondence describing the above referenced project. This letter serves as comment on the proposed undertaking from the State Historic Preservation Officer, the Executive Director of the Texas Historical Commission.

The review staff, led by Debra L. Beene, has completed its review. We understand that you need us to comment on the proposed removal of the island and sandbar downstream of the Retamal Diversion Dam. The removal of these sediments should not have an effect on cultural resources eligible for inclusion in the National Register of Historic Places (NRHP). However, the construction of field offices, storage yards, and diked facilities for storage and dewatering of the excavated sediments has the potential to damage cultural resources. Considering that these activities will be restricted to the Mexican riverbank, which is beyond our jurisdiction, we have no cultural resource concerns and the project should continue without further consultation with this office.

It is possible, however, that buried cultural materials may be present in the project area. If such materials are encountered during construction, work should cease in the immediate area; work may continue in the project area where no archaeological deposits are present. The State Historic Preservation Officer should be notified at 512/463-6096.

We look forward to further consultation with your office and hope to maintain a partnership that will foster effective historic preservation. We thank you for your efforts to preserve the irreplaceable heritage of Texas. **If you have any questions concerning our review or if we can be of further assistance, please contact Debra L. Beene at 512/463-5865.**

Sincerely,

for
F. Lawerence Oaks, State Historic Preservation Officer

cc: Daniel Borunda, Environmental Protection Specialist, IBWC
Steve Fox, IBWC
Anthony Davis, Project Manager, Parsons, Austin

FLO/dlb

United States Department of the Interior
FISH AND WILDLIFE SERVICE
Ecological Services - LRGV SubOffice
Phone: (956) 784-7631 Fax: (956) 787-0547
Rt. 2 Box 202-A
Alamo, TX 78516
June 17, 2003

Mr. Anthony Davis, P.E.
Project Manager
Parsons
8000 Centre Park Drive, Suite 200
Austin, TX 78754

Re: Consultation No. 2-11-03-I-0207

Dear Mr. Davis:

This responds to your letter received March 31, 2003, regarding the effects of the planned removal of sediment material within the Rio Grande on species federally-listed or proposed for listing as threatened and endangered occurring in Hidalgo County, Texas. In addition, your project was evaluated with respect to wetlands and other important fish and wildlife resources.

This office understands that the project consists of the removal of sediment material that has accumulated downstream of the Retamal Diversion Dam located in the Lower Rio Grande Flood Control Project (LRGFCP). The dam is located approximately 8 miles south of the City of Weslaco, and is about 182 feet wide and 88 feet long and contains three radial gates that regulate river flows. Its primary function is to force all flood flows in excess of the safe capacity of the channel (20,000 cfs design flow) through the Mexican Floodway of the Rio Grande between Retamal and the Gulf of Mexico.

Currently, sediment has accumulated below the dam and is impairing the ability to pass the design flow designated by the US and Mexico. Part of the proposed project also entails the leveling of the river channel. Sediment accumulation downstream of the dam has occurred for a length of time, in that what was once a sandbar along the US side has now been covered by grasses, brush and several trees. IB&WC would like to first remove all vegetation from the sandbar/island, by chipping brush and trees and deposit these materials in a landfill, and then removing the sandbar/island and depositing the materials on the Mexican side where it will then be disposed of in a landfill.

On March 27, 2003, the project site was visited by representatives of several agencies including Internal Boundary and Water Commission (IB&WC), US Fish and Wildlife Service (USFWS), both National Wildlife Refuge and Ecological Services, and representatives of Parsons Consulting. The project area is bordered on three sides by the La Coma tract of the Lower Rio Grande Valley National Wildlife Refuge (LRGV-NWR) system, and the downstream portion of the sandbar/island appears to be directly across a portion of the refuge. LRGV-NWR markers were noted for IB&WC, as well as a visual observation of the sandbar/island. It was noted by IB&WC that the construction phase of the project would encompass entering the sandbar/island via the IB&WC levee in order to remove and dispose of the vegetation, then sediment removal would begin at the downstream portion of the sandbar/island so as not to have to cross over and impact LRGV-NWR land.

Regarding important fish and wildlife resources, please keep in mind that many bird species protected under the Migratory Bird Treaty Act may nest in an area containing trees or other suitable habitat. As the

Federal agency responsible for the protection of migratory birds, the Service recommends vegetation disturbances potentially associated with these activities avoid the general nesting period of March through August or that areas proposed for disturbance be surveyed first for nesting birds, in order to avoid the inadvertent destruction of nests, eggs, etc.

In accordance with Executive Order 13112 on Invasive Species and the Executive Memorandum on Beneficial Landscaping, any landscaping should be limited to seeding and replanting with native species, where possible. A mixture of grasses and forbs appropriate to address potential erosion problems and long-term cover should be planted when seed is reasonably available. Although bermudagrass is listed in seed mixtures, this species and other introduced species should be avoided as much as possible. Also, the Service recommends native trees, shrubs, and herbaceous species used for landscaping in the project areas which are more drought-tolerant, adaptable, and use less water. Tree species already located in the area should remain undisturbed as much as possible.

Based on the above recommendations and understandings, the Service concurs that there will be a Not Likely to Adversely Effect on Federally-listed species by the proposed project. For continued compliance under the Endangered Species Act, the Service recommends further consultation on any project-related impacts not described herein. If project plans change, portions of the project were not evaluated, or differ from the described above, please notify us.

If we can be of further assistance, please contact Brunilda Fuentes-Capozello on this letterhead.

Sincerely,

Brunilda Fuentes-Capozello

Brunilda Fuentes-Capozello
Fish & Wildlife Biologist

For
Allan M. Strand
Field Supervisor

cc: Field Supervisor, U.S. Fish and Wildlife Service, Corpus Christi, TX
June 17, 2003

DEPARTMENT OF THE ARMY
GALVESTON DISTRICT, CORPS OF ENGINEERS
Corpus Christi Regulatory Field Office
5151 Flynn Parkway, Suite 306
Corpus Christi, Texas 78411-4318

REPLY TO
ATTENTION OF

June 18, 2003

Regulatory Branch

SUBJECT: D-14828

International Boundary and Water Commission
United States Section
Attention: Daniel Borunda
4171 N. Mesa Street Suite C100
El Paso, Texas 79902-1432

Gentlemen:

This concerns a letter, dated May 9, 2003, submitted on your behalf by Parsons, requesting comments on the proposed removal of a island and sandbar from the Rio Grande River as shown on the enclosed plan in one sheet. The project site is located downstream of the Retamal Diversion Dam in the Lower Rio Grande Flood Control Project, 8 miles south of Weslaco, Hidalgo County, Texas.

According to the information that was submitted by Parsons, a vegetated island and sand bar will be removed from the Rio Grande River by hydraulic dredging. Approximately 54,000 cubic yards of material will be dredged and placed in temporary dewatering cells along the Mexican riverbank. The material will eventually be removed from the cells and taken to a permanent disposal area in Mexico. The Rio Grande River is a navigable water of the United States and is regulated by the Corps of Engineers under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. Under Sections 10 and 404, activities that involve work in waters of the United States, including the discharge of dredged and/or fill material, require a Department of the Army (DA) permit. The proposed removal of the sandbar will require a DA permit under Section 10; however, as long as all the excavated material will be placed in Mexico there will not be a requirement to review the permit under Section 404 of the Clean Water Act. Mitigation will probably be necessary to compensate for those impacts to wetlands located on or adjacent to the island and sandbar. Once project specific plans are available, you should contact us for additional information regarding the permitting process.

Please reference the determination number D-14828 in future correspondence pertaining to this project. This determination is based on a preliminary jurisdictional determination. If you have any questions concerning this matter, please contact Marie Pattillo at the letterhead address or by telephone at 361-814-5847.

Sincerely,

Lloyd Mullins
Unit Leader,
Corpus Christi Field Office

Enclosures

Copy Furnished: Parsons, Attention: Anthony Davis, 8000 Centre Park Drive, Austin, Texas 78754

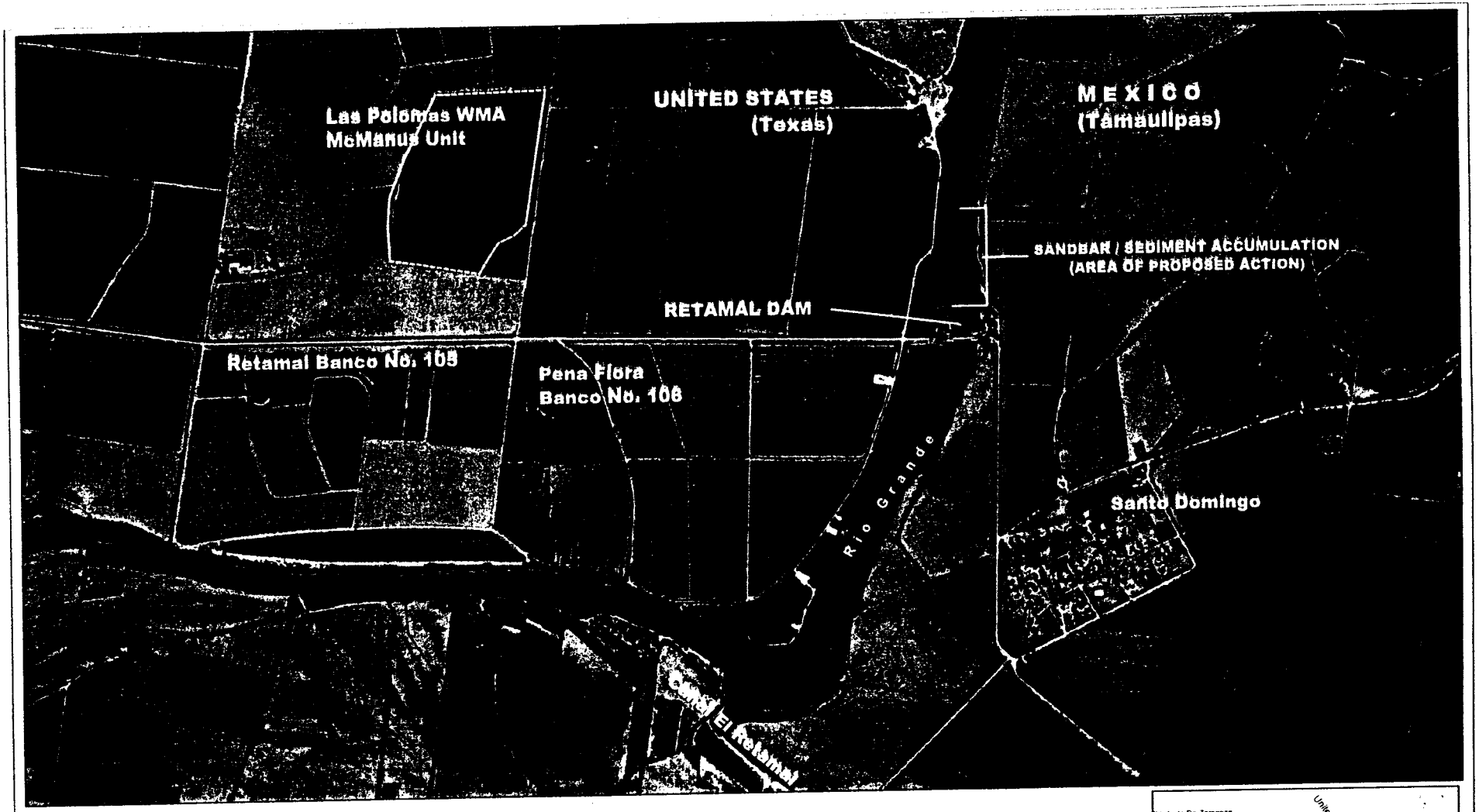

FIGURE 2.1 Detailed Location of Study Area

D-14828
Location Map
International Boundary and
Water Commission
Rio Grande River
Hidalgo County, Texas
Page 1 of 1
18 June 2003

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: International Boundary & Water Commission	File Number: D-14828	Date 18 June 2003
Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of Permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of Permission)	B
	PERMIT DENIAL	C
	APPROVED JURISDICTIONAL DETERMINATION	D
X	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/inet/functions/cw/cecwo/reg/ or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved jurisdictional determination (JD) or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION

If you have questions regarding this decision and/or the appeal process you may contact:
Marie C. Pattillo, Project Manager
U.S. Army Corps of Engineers, CESWG-PE-RB
Corpus Christi Regulatory Field Office
5151 Flynn Parkway, Suite 306
Corpus Christi, Texas 78411-4318
Telephone 361-814-5847; FAX 361-814-5912

If you only have questions regarding the appeal process you may also contact:
James E. Gilmore, Appeal Review Officer
CESWD-ETO-R, 1100 Commerce Street
Dallas, Texas 75242-0216
Telephone: 214-767-2457; FAX 214-767-9021
Email: James.E.Gimore@swd02.usace.army.mil

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of appellant or authorized agent.	Date:	Telephone number:

INTERNATIONAL BOUNDARY AND WATER COMMISSION
UNITED STATES AND MEXICO

OFFICE OF THE COMMISSIONER
UNITED STATES SECTION

JUN 2 7 2003

Ms. Sidne Tiemann
Water Quality Division
Texas Commission on Environmental Quality
MC-150, P.O. Box 13087
Austin, TX 78711-3087

Re: USACE Permit Application Retamal Diversion Dam

Dear Ms. Tiemann:

The United States Section, International Boundary and Water Commission (USIBWC) has received your letter dated May 30, 2003. We would like to respond to your question regarding return water from temporary dewatering cells flowing into the Rio Grande during operations of the proposed sediment removal project at Retamal Diversion Dam. As per your telephone conversation with Mr. Daniel Borunda of my staff, the USIBWC does not anticipate any return water entering the Rio Grande during the course of this project. The binational project entails removing sediment accumulated downstream of the diversion dam and placing the sediment in Mexico. The sediment slurry will be placed in dewatering cells away from the river, and the proper containment will be constructed. The area near the project location slopes away from the river bank, and return water has no possibility of flowing back into the river. At this time two possible sites have been suggested by Mexico. We have scheduled a meeting with the Mexican Section of the IBWC (MXIBWC) at their offices in Anzalduas on July 10, 2003 to finalize logistics and the location of the sediment.

As this project progresses, we will keep you informed. If you have any questions, please feel free to call Environmental Protection Specialist, Daniel Borunda at (915) 832-4701.

Sincerely,

Sylvia A. Waggoner

Sylvia A. Waggoner
Division Engineer
Environmental Management Division

cc: Parsons
Attn: Mr. Anthony C. Davis
8000 Centre Park Drive, Suite 200
Austin, TX 78754

APPENDIX B
PHYSICAL AND CHEMICAL ANALYSIS RESULTS OF SEDIMENT SAMPLES

1
2

TABLE B-1 ANALYTICAL RESULTS AND SCREENING CRITERIA FOR PARAMETERS DETECTED IN SEDIMENTS

	Sample ID	SED 1			SED 2			SED 3			SED 4			SED DUP 1			Screening Criteria	
	Collection Date	6/3/2003			6/3/2003			6/3/2003			6/3/2003			6/3/2003				
Parameter	Units[1]	Result	Flag	PQL	Result	Flag	PQL	Result	Flag	PQL	Result	Flag	PQL	Result	Flag	PQL	$^{Tot}Soil_{Comb}$ [1]	$^{Tot}Sed_{Comb}$ [2]
Metals																		
Arsenic	mg/kg-drywt	2.95		0.20	2.33		0.17	3.17		0.20	2.24		0.18	2.27		0.16	2.42E+01	1.10E+02
Beryllium	mg/kg-drywt	0.31		0.20	0.20		0.17	0.36		0.20	0.20		0.18	0.22		0.16	3.76E+01	2.70E+01
Cadmium	mg/kg-drywt	0.10	U	0.10	0.08	J	0.10	0.14		0.10	0.06	J	0.10	0.09	J	0.10	5.17E+01	1.10E+03
Chromium (total)	mg/kg-drywt	3.96		0.59	3.20		0.50	4.81		0.61	2.96		0.55	3.33		0.49	2.31E+04	3.60E+04
Chromium (3+)	mg/kg-drywt	3.96		0.59	3.20		0.50	4.81		0.61	2.96		0.55	3.33		0.49	2.31E+04	3.60E+04
Copper	mg/kg-drywt	3.39		0.78	1.71		0.67	4.19		0.81	1.78		0.74	1.72		0.65	5.48E+02	2.10E+04
Lead	mg/kg-drywt	6.80		0.30	4.73		0.25	7.97		0.30	4.98		0.27	4.92		0.25	5.00E+02	5.00E+02
Nickel	mg/kg-drywt	4.48		0.39	3.30		0.34	5.28		0.41	3.03		0.37	3.35		0.32	8.41E+02	1.40E+03
Thallium	mg/kg-drywt	0.18	J	0.20	0.57	J	0.17	0.42		0.20	0.25		0.18	0.17		0.16	6.31E+00	4.30E+01
Zinc	mg/kg-drywt	7.03		0.78	5.53		0.67	8.05		0.81	6.19		0.74	4.87		0.65	9.92E+03	7.60E+04
Semi-Volatiles																		
Naphthalene	ug/kg-drywt	9.45		3.90	2.82	J	3.36	3.16	J	4.05	3.69	U	3.69	3.24	U	3.24	1.24E+05	2.50E+06
Di-n-octylphthalate	ug/kg-drywt	11.7	U	11.7	10.1	U	10.1	12.2	U	12.2	11.1	U	11.1	12.7		9.72	1.29E+06	3.10E+06
Miscellaneous Parameters																		
Ammonia (as N)	mg/kg-drywt	15.3		0.10	14.0		0.10	43.7		0.10	37.9		0.10	8.25		0.10	7.90E+02	--
Total Organic Carbon (TOC)	%	0.79		0.13	0.57		0.11	1.19		0.14	0.62		0.12	0.57		0.10		
% Solids	percent	77.2			89.1			74.3			81.1			92.8				
Grain Size																		
Gravel	percent	0.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0		
Sand	percent	66.5		0.0	86.5		0.0	64.0		0.0	66.0		0.0	87.8		0.0		
Silt	percent	21.9		0.0	10.9		0.0	21.8		0.0	27.1		0.0	7.3		0.0		
Clay	percent	11.6		0.0	2.6		0.0	14.2		0.0	6.9		0.0	4.9		0.0		

ug/kg - micrograms per kilogram
mg/kg - milligrams per kilogram
U - The material was analyzed for, but was not detected above the practical sample quantitation limit.
J - The associated value is an estimated quantity
PQL - Practical Quantitation Limit
[1] TCEQ Teir 1 Residential Soil (30-acre source)PCL. Units are same as analytical data.
[2] TCEQ Teir 1 Sediment PCL for direct human contact. Units are same as analytical data.
drywt - based on dry weight of sample

TABLE B-2 ANALYTICAL RESULTS AND SCREENING CRITERIA FOR PARAMETERS DETECTED IN ELUTRIATE

Sample ID		SED 1			SED 2			SED 3			SED 4			SED DUP 1			Screening Criteria[1]	
Collection Date		6/3/2003			6/3/2003			6/3/2003			6/3/2003			6/3/2003			Aquatic Life ^{SW}RBEL	
Parameter	**Units**	**Result**	**Flag**	**PQL**	**Result**	**Flag**	**PQL**	**Result**	**Flag**	**PQL**	**Result**	**Flag**	**PQL**	**Result**	**Flag**	**PQL**	**ug/L**	**Basis**
Metals																		
Arsenic	ug/L	2.06		1.00	4.04		1.00	3.29		1.00	3.51		1.00	3.70		1.00	360	acute
Copper	ug/L	1.13		1.00	2.13		1.00	3.92		1.00	1.05		1.00	3.31		1.00	9.6	acute
Nickel	ug/L	2.60		1.00	5.28	J	1.00	3.63		1.00	2.88		1.00	12.0	J	1.00	787.4	acute
Zinc	ug/L	0.56	J	1.00	2.90	J	1.00	3.02		1.00	0.60	J	1.00	11.3	J	1.00	63.6	acute
Miscellaneous Parameters																		
Ammonia (as N)	mg/L	0.25		0.03	0.27		0.03	0.28		0.03	0.22		0.03	0.24		0.03	--	--
Total Organic Carbon (TOC)	mg/L	4.00		0.50	5.20	J	0.50	6.10		0.50	9.10		0.50	9.30	J	0.50		

ug/L - micrograms per liter
mg/L - milligrams per liter
U - The material was analyzed for, but was not detected above the practical sample quantitation limit.
J - The associated value is an estimated quantity
PQL - Practical Quantitation Limit

[1] Screening criteria are TCEQ RBELs for aquatic life in fresh water. Acute RBELs were used since the potential impact will be temporary.

APPENDIX C
DESCRIPTIONS OF FEDERALLY LISTED AND STATE LISTED SPECIES FOR THE PROJECT AREA

1

APPENDIX C
DESCRIPTIONS OF FEDERALLY LISTED AND STATE LISTED SPECIES FOR THE PROJECT AREA

Black Spotted Newt *(Notophthalmus meridionali)*

The black spotted newt is an aquatic amphibian listed as threatened by the State of Texas. The geographic range of the black spotted newt is in the Gulf Coastal Plain south of the San Antonio River. Habitat of the black spotted newt is a semi-arid area with limited rainfall; however, the newt requires wet or intermittently wet areas, such as arroyos, canals, ditches, or in dry periods, under logs, rocks, and shallow depressions (TPWD 2002).

American Peregrine Falcon *(Falco Peregrinus anatum)*

The American peregrine falcon is listed by the TPWD as endangered. The USFWS recently delisted the falcon as endangered (TPWD 2003a). Geographic distribution of the migratory falcon in Texas is mostly in the rugged canyons in western regions of the state, predominately along the Rio Grande. As of 1997, nearly half the falcons lived on the Mexico side of the Rio Grande (TPWD 2003b). The falcon nests on cliffs in the Trans-Pecos of west Texas, where it lays three to four eggs in April and migrates to the Texas coast. The American peregrine falcon prefers meadows, mudflats, beaches, marshes, and lakes where avian prey species are abundant. The falcon feeds on a variety of birds, including blackbirds, jays, swifts, doves, shorebirds, and songbirds (TPWD 2003b).

Arctic Peregrine Falcon *(Falco peregrinus tundrius)*

The Arctic peregrine falcon is listed by TPWD (2002) as threatened. USFWS delisted the Arctic peregrine falcon as threatened. The Arctic peregrine falcon nests in the arctic islands and tundra regions of Alaska, Canada, and Greenland, and passes through Texas twice a year during migration to its wintering areas in South America (TPWD 2003a). The falcon stops in Texas to feed before continuing its migration The Arctic peregrine prefers meadows, mudflats, beaches, marshes, and lakes where avian prey species are abundant. The falcon feeds on a variety of birds, including blackbirds, jays, swifts, doves, shorebirds, and songbirds (TPWD 2003b).

Tropical Parula *(Parula pitiayma)*

The tropical parula is a small bird listed by TPWD (2002) as threatened. Distribution of the bird is from southern Texas (Kenedy, Hidalgo, Willacy, and Brooks Counties) and northern Mexico south to South America. The bird is considered non-migratory, although the northern populations, including South Texas populations, are partially migratory. Winter records north and east of breeding grounds may show postbreeding dispersal northward and eastward along Texas coast and the birds that

winter in the Lower Rio Grande Valley may be either migrants from Kenedy County, residents, or dispersants from large populations in Mexico.

The breeding habitat of the tropical parula in the Lower Rio Grande Valley of South Texas is found in mixed deciduous riparian forest in closed or partially closed-canopy dominated by cedar elm (*Ulmus crassifolia*), sugar hackberry (*Celtis laevigata*), Texas ebony (*Pithecellobium Ebano*), and Mexican ash (*Fraxinus berlandieriana*) (Brush 999). Masses of epiphytic growth, such as Spanish moss (*Tillandsia usneoides*) and ball moss (*Tillandsia baileyi*) are needed to support breeding, since the nests are built into the moss. The habitat in this area is often thick woods near edges of lagoons or dry riverbeds. The non-breeding habitat of the bird is similar to the breeding habitat. In the winter in South Texas, the birds may live in well-wooded residential areas with tall trees or riparian forests lacking epiphytes. They breed from April to May

Jaguarundi *(Herpailurus yaguarondi)*

The jaguarundi is listed as endangered by the USFWS and TPWD. The jaguarundi is a small, slender-bodied, long-tailed, unspotted, weasel-like cat whose habitat is one of the dense, thorny thickets of southern Texas where cacti, mesquite, cat claw, granjeno, and other spine-studded vegetation are plentiful and access to water is necessary. They sleep and give birth to their young in dens formed from tree hollows, dense shrub, or treefalls. In Texas, the range of the jaguarundi extends from the South Texas Brush Country and Lower Rio Grande Valley (NatureServe 2003; TPWD 2003d; Texas Tech University 1997). Loss of the dense brush habitat due to clearing is the main reason for the species loss. Jaguarundis have a life span of 16 to 22 years and may have one to two litters of two per year (TPWD 2003d). Their diet consists predominately of birds, reptiles, and small mammals such as rats, mice, and rabbits, and they occasionally may consume fishes and fruit (NatureServe 2003).

Ocelot *(Leopardus pardalis)*

The ocelot is listed by USFWS and TPWD as endangered. The ocelot is a medium-sized, spotted cat with a moderately long tail similar in size to a bobcat. Historical records show that the bobcat distribution once ranged throughout south Texas, the southern Edwards Plateau, and along the Coastal Plain; however today the bobcat is now limited to several isolated patches of suitable habitat in three or four counties in the South Texas Brush Country and Lower Rio Grande Valley (NatureServe 2003b; TPWD 2003e). Habitat requirements of the ocelot are dense, thorny, low brush such as spiny hackberry, lotebush, and blackbrush. Loss of the dense brush habitat due to clearing is the main reason for the species loss. Ocelots live within a home range of about 1 to 4 square miles. Ocelots hunt by night and spend the day resting in thick brush. They feed on a variety of small mammals, birds, reptiles, amphibians, and fish. The den of the ocelot is in caves in rocky bluffs, tree hollows, or the densest part of a thorny thicket. The young are born in the fall and the mother stays with the young in the day and hunt at night (NatureServe 2003).

Black striped snake (*Coniophanes imperialis)*

The black striped snake is listed as threatened by the TPWD. The black striped snake is a mildly venomous snake 12 to 18 inches in length and has alternating black and brown stripes. The snake prefers loose, sandy soil habitats that contain masses of rotting cacti and other scattered debris (Bockstanz 2000). The snake may also be found in the cracks in soils that form when soils dry out quickly. The black striped snake burrows into the soil by day and forages at night on small vertebrates such as frogs, lizards, mice, and smaller snakes. The range distribution of the snake in Texas is far south Texas (Bockstanz 2000; TPWD 2003f; Texas Tech University 1997).

Indigo Snake *(Drymarchon corais)*

The indigo snake is listed as threatened by the TPWD. The indigo snake is 60 to 80 inches in length and has shiny, translucent black or blue-black body with reddish-orange sides at the head. Habitat of the indigo snake is moist riparian breaks in the thorn brush woodlands and mesquite savannah of the coastal plains near ponds and rivers, and may also be seen in grassy plains or on coastal sandhills. The range of the snake is south Texas. Diet of the snake is small mammals, birds, frogs, lizards, snakes, and other vertebrates that are small enough to swallow (Bockstanz 2000).

Speckled Racer *(Drymobius margaritiferus)*

The speckled snake is listed as threatened by the TPWD. The snake is 30 to 40 inches in length and has a streamlined black body with a greenish cast and dart-shaped yellow spots in the central area of each black scale. The habitat of the speckled racer is dense thickets and palm groves with ample plant debris close to a water source. The range of the snake in Texas is limited to far south Texas. The speckled racer is a diurnal forager and its diet consists primarily of frogs and toads (Bockstanz 2000).

Texas Ayenia *(Ayenia limitaris)*

The Texas ayenia was listed in 1994 by the USFWS as endangered and TPWD as endangered. The plant once occurred throughout Cameron and Hidalgo Counties in south Texas and in Mexico; however, due to clearing of habitat, only one small population of about 20 individuals exist today in Hidalgo County (TPWD 2003). Texas ayenia is a thornless medium sized shrub 2 to 3 feet tall. The leaves are 1 to 2 inches long, simple and have toothed margins. The flowers are small, clustered with five green, pink, or cream-colored petals, and the fruit is a small, round capsule with short prickles. Found on terraces and floodplains, the Texas ayenia may be dependent on flooding for nutrient deposition and seed dispersal. The habitat of the Texas ayenia is dense, moist riparian woodland with thick canopy cover. The population in Hidalgo County occurs on nearly level sandy clay loam soils of the Hidalgo series. Plants that grow alongside the Texas ayenia include mesquite, granjeno, lotebush, and snake-eyes. The plant community was once an extensive thicket in the Rio Grande delta; however, today it covers less than 5 percent of its original acreage (TPWD 2003).

Bockstanz, Lori M. and David C. Cannatella. 2000. Herps of Texas.

http://www.zo.utexas.edu/research/txherps/.

Brush, T. 1998. Recent nesting and current status of Red-billed Pigeon along the lower Rio Grande in southern Texas. Bulletin of the Texas Ornithological Society 31(1):22-26.

NatureServe. 2003. NatureServe Explorer: An online encyclopedia of life Jaguarundi, Herpailurus yaguarondi. Version 1.8. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: July 8, 2003).

NatureServe. 2003. NatureServe Explorer: An online encyclopedia of life Ocelot Leopardus pardalis. Version 1.8. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: July 8, 2003).

NatureServe. 2003. NatureServe Explorer: An online encyclopedia of life Indigo Snake Drymarchon corais. Version 1.8. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: July 8, 2003).

NatureServe. 2003. NatureServe Explorer: An online encyclopedia of life Black striped snake Coniophanes imperialis. Version 1.8. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: July 8, 2003).

Texas Parks and Wildlife Department. 2002. Annotated List of Rare Species for Hidalgo County, Last revised August 2002.

Texas Parks and Wildlife Department. 2003a. Peregrine Falcon
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APPENDIX D
COMMENTS AND RESPONSES TO THE DRAFT ENVIRONMENTAL ASSESSMENT

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